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Improved Hominy Mill.

This mill is intended to crack or break corn for hominy, and differs from most mills for that purpose constructed heretofore. The object is to reduce the corn evenly, or divide it properly, so that it shall be all of one size, free from small grains or fine flour, which are likely to breed worms and turn sour.

In some hominy mills it is customary to cause the corn to flow continuously through the cracking apparatus, and it is asserted that this is an inefficient plan, for much of the corn passes through without being broken, thus causing an amount of labor to separate it afterward, which is unnecessary.

In this mill the corn is put in in charges; that is to say, a certain amount is put in the hopper, A, and subjected to the action of the crackers or breakers, B. These crackers literally cut the corn up, for they consist of a series of steel cutters, C, arranged on a shaft in rows, and wedge-shaped or widest at the heads. The working edges of these cutters are serrated or toothed, to give them more efficiency, and they are staggered or alternated in their positions with relation to each other, so that the spaces between them are very small, the cutters in one row coming opposite, or nearly opposite, the space in the her row.

The corn admitted to these cylinders through the hopper, is then acted on by these teeth and thoroughly reduced. In the process, any fine flour or smaller grains than the regular size, falls through the slots, E, Fig. 2, into any receptacle placed to catch it.

After the corn has been thoroughly broken to the proper size it is dropped into the conveyer, G, which is a quick-pitched screw. This conveyer being set in motion by the gears, H, slowly moves the grain forward into the screen, I, below where it is properly bolted and rendered fit for market.

Fig. 1.

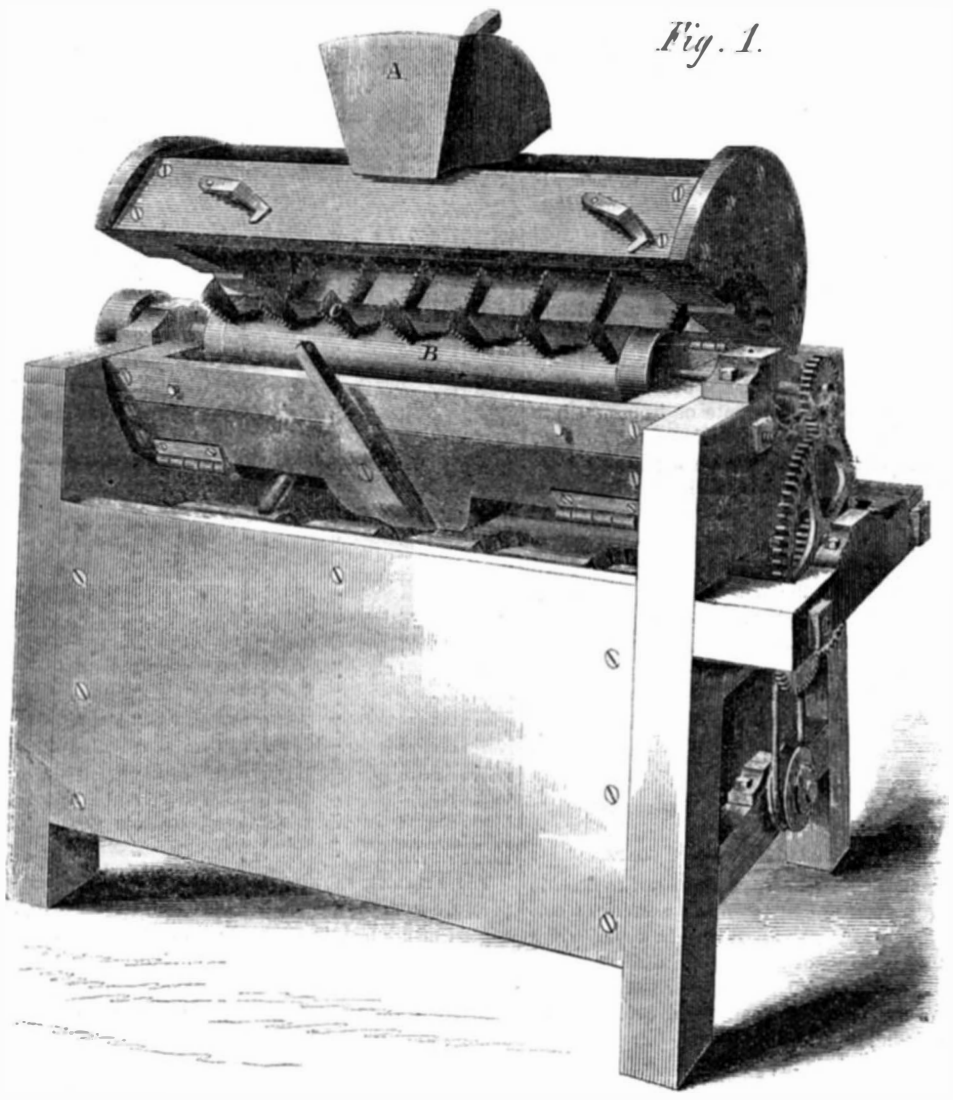
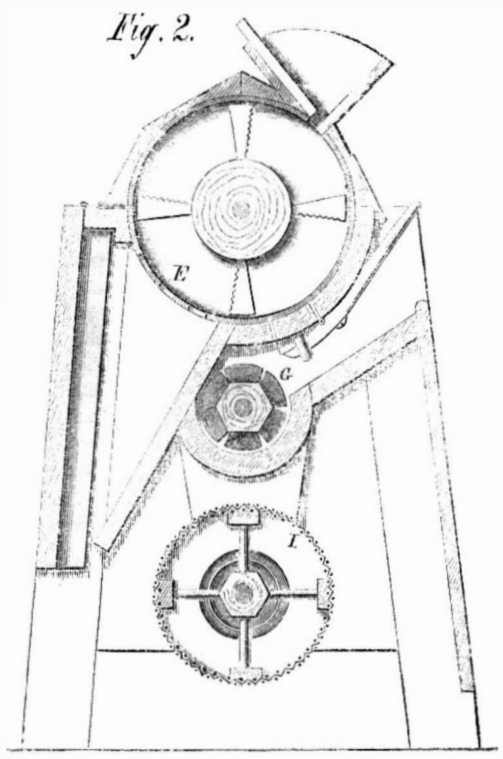


Fig. 2.



JACKSON'S HOMINY MILL.

These combinations give this machine many advantages, and a patent is now pending on it through the Scientific American Patent Agency by the inventor, Andrew P. Jackson, of Memphis, Tenn.; address him at that place for further information.

Another Monstrous Cast-iron Anvil.

Some months ago we chronicled the fact that an immense anvil weighing 160 tuns had been cast in Sheffield, Eng. Quite recently this enormous block has been exceeded in weight by 40 tuns. The Liverpool *Albion* thus speaks of a huge cast iron block weighing 200 tuns:—"The engineering science in its giant progress is constantly needing increased power in its appliances; and the massive forgings now required in ship-building necessitates steam-hammers of corresponding proportions. Many huge hammers have been made, but none have yet reached the size of the one now in process of erection at the Bolton Iron and Steel Works. This hammer is being made by Messrs. Nasmyth and Company, of Patricroft, and is of gigantic proportions, and will strike a blow equal to 75 tuns. This of course will require an immense anvil block, and the process of casting one for it, weighing 200 tuns, on Wednesday last, was a work of unusual interest. The iron was smelted in two large patent upper tweer cupola furnaces, 24 feet in hight and 7 feet in diameter. The molten metal was run into the molding in a constant stream, supplied alternately from each furnace. The process occupied ten hours. The metal was kept in a state of fusion by means of burning charcoal until the whole quantity was poured in. The anvil block measures 12 feet square at the base, and 12 feet 6 in. in depth. The figure is pyramidical, and it is cast base upwards. The metal contains a certain proportion of Bessemer steel. The casting was performed under the superintendence of Mr. Ireland, of Manchester. Large numbers of visitors were at the works during the day, and were entertained at luncheon. The hugh casting is not likely to be perfectly cold three months hence, and it will certainly not be reduced to a sufficiently low temperature to be dealt with under two months. When cool enough, it will be turned over, as already explained. The bed for the reception of the block will be enclosed in a large circular wrought iron cylinder, measuring 20 feet in depth and 18 feet diameter. This will be sunk in the ground and filled with concrete, and when finally deposited in its bed the anvil will appear about 2 feet 6 inches above the ground."

TARBOX'S SAD IRON.—The address of the patentee of this invention, illustrated on page 30, of the present volume, is New York city, not Wyoming, Pa., as given.

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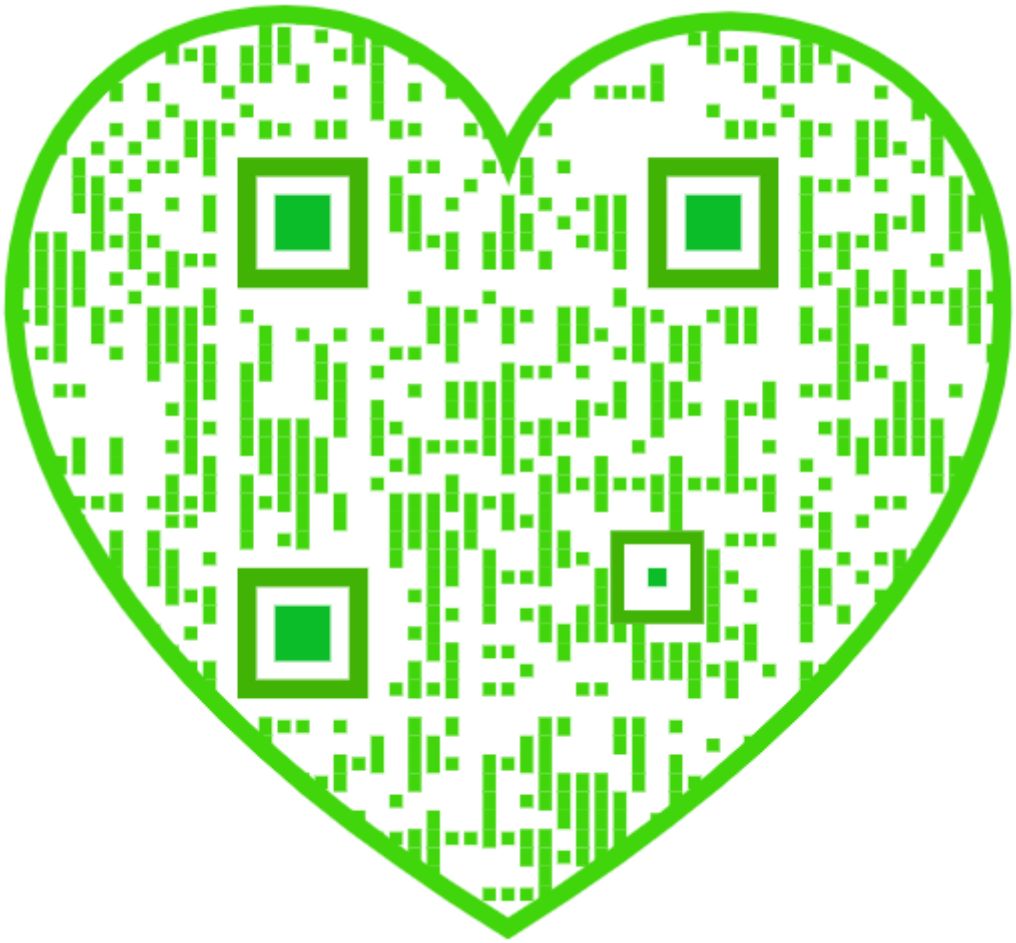

NOTES ON NEW DISCOVERIES AND NEW APPLICATIONS OF SCIENCE.

THE NEW METHOD OF OBTAINING OXYGEN.

We gave three weeks ago a brief account of Fleitmann's method of preparing oxygen, by gently heating a solution of chloride of lime with a small quantity of peroxide of cobalt. As cheap oxygen would be of immense value in the metallurgical and other arts, and as Fleitmann's process seems to promise to enable us to obtain that gas at a rate of cost at which it would be available for technical purposes, we now add a few further details. Chloride of lime is a compound of chlorine, calcium, and oxygen; Fleitmann's process abstracts all the oxygen, leaving behind only chloride of calcium. The peroxide of cobalt employed in the process is required only in very minute quantity,—one part of the peroxide to a thousand parts of chloride of lime will usually be found sufficient,—and as the same portion of peroxide can be used over and over again, while the reaction takes place at a temperature of between 70 and 80 deg., so that the process does not involve the consumption of much fuel, the cost of obtaining oxygen by this method should but very slightly exceed the cost of the chloride of lime, which is a tolerably cheap commodity. M. Fleitmann's theory of the process is that there are several peroxides of cobalt, containing different proportions of oxygen, and that "one of these peroxides abstracts oxygen from the chloride of lime to form a higher oxide, which is then decomposed into a lower oxide and free oxygen," this alternate composition and decomposition going on continuously. Instead of adding actual peroxide of cobalt to the chloride of lime solution, it is sufficient to add a proper quantity of solution of any cobalt salt from whose solution the hydrated peroxide is precipitable by chloride of lime. The solution of chloride of lime should be a strong one, and, as we have already stated, "should be quite clear, as a thick or murky solution will froth over." M. Fleitmann's explains that "the best way of making a clear and strong solution is by first digesting one portion of chloride of lime in water, decanting the clear liquor, and then making use of it to digest another portion of chloride. In this way it is easy to get a liquor which will evolve from twenty-five to thirty times its own volume of oxygen." He adds: "On the small scale it is best to employ a capacious flask, which may be about seven-eighths filled with the solution. On a large scale, for technical purposes, a sort of steamboiler might be used, and the oxygen be so obtained under pressure, and capable of being employed as a blast." M. Fleitmann has published no statement of the cost of oxygen obtained by this method, but it would probably not exceed one half penny per cubic foot,—a price at which it would not be too costly for use in many operations in the arts requiring an intense temperature.

SILICIUM IN IRON.

It is well known that there are two states in which carbon exists in solid iron: a state of chemical combination with the iron, and a state of merely mechanical diffusion through its mass. It is also known that the carbon existing in iron in the last-mentioned state is always in the form of graphite. Dr. Phipson has just announced to the Academy of Sciences that he has discovered that silicium also may exist in cast iron either in a state of combination or in a state of diffusion merely, and that, like carbon, when merely diffused through the iron, and not in combination therewith, it is always in the graphitic form. He adds, what, if true, is of great practical importance, that upon the condition of the silicium in any given sample of cast iron depends, in a very great degree, the practicability of converting that iron into steel by the Bessemer process. He regards diffused or uncombined silicium as the least injurious, stating that while iron containing as much as three or four per cent of free silicium can be converted into excellent steel by the Bessemer method, the presence of a very much smaller quantity of combined silicium will either render the iron containing it incapable of being converted into steel by that method at all, or will cause the steel produced from such iron to be so hard and bad as to be quite incapable of being worked. He promises to publish shortly a full account of his method of determining the condition in which silicium exists in iron, with details of his experiments upon the influence of that condition upon the results of the treatment of the iron by the process referred to.

SIMPLE METHOD OF REDUCING SOME METALS.

Glucinum and zirconium, the former being the metallic base of the emerald and the latter that of the zircon and the hyacinth, are metals of which chemists know very little. They have hitherto been obtained only from very rare and costly minerals, and by reduction from their haloid salts by means of potassium. A paper in the last number of "Cosmos" suggests, however, that these two metals, and also the still less known ones, yttrium, erbium, terbium, cerium, thorinum, lanthanum, and didymium, probably exist much more abundantly than has hitherto been supposed and states that they all admit of being isolated by an exceedingly simple electrolytic method, consisting merely, in each case, in immersing in a solution of a salt of the metal which it is desired to reduce a plate of zinc and a plate of platinum, duly connected together. The metal is then gradually precipitated upon the platinum plate.

PRODUCTION OF PURE IRON FOR ELECTRO MAGNETS.

It is very important that the iron used in the construction of electro-magnets and their armatures should be as pure as possible, since the purer iron is the more strongly susceptible is it to magnetic attraction, and the more speedily it loses any magnetic power which it may have acquired by induction. Electrolysis, however, is the only method as yet known by which iron can be obtained in a state at all approaching purity, and electro-deposited iron has not hitherto been obtainable cheaply enough to admit of its being used in the construction of electro-magnetic apparatus of any size. M. Becquerel has been trying to find a cheap method of obtaining such iron, and he has devised one by which he thinks that electrolytic iron could be obtained at a price at which it would not be too costly for use in the construction of telegraphic and other electro-magnetic apparatus. Into one of the branches of a large U-shaped tube he pours a solution of proto-sulphate of iron, and into the other branch a solution of chloride of sodium. He then plunges into each branch a plate of platinum, one connected with the positive and the other with the negative pole of a constant battery of three or more cells. He so regulates the intensity of the current as to keep the disengagement of hydrogen barely perceptible, and the final result of the primary and secondary actions which take place is that a double sulphate of iron and sodium is formed at the positive pole, and that oxide of iron is reduced by hydrogen at the negative pole. The reduced iron is of course deposited on the negative electrode, from which, however, in may be readily detached. It is all but absolutely pure, and is attracted by the magnet much more powerfully than the purest iron hitherto obtainable in commerce.

ALUMINA AS AN INGREDIENT OF SOAPS.

Soaps intended for toilet use ought not to contain any free alkali, seeing that free alkali exercises a corrosive action upon the skin. Soaps, however, which are perfectly neutral, containing no alkali which is not combined with the steuric or other fatty acid employed, are not nearly such powerful detergents as soaps containing an excess of alkali,—are not nearly so capable of dissolving the substances which it is the office of soap, when applied to the body to remove from the skin. Singular to say, M. Bonnamy, a manufacturing chemist resident at Saint-Germain, has found that if that very neutral substance, pure alumina, be added to completely neutral soap, the soap becomes even more powerfully detersive than the most highly alkaline soap, while remaining entirely free from corrosive properties. The alumina may be introduced into the soap in various ways, the most advantageous perhaps being the use, in the process of manufacturing the soap, of an alkaline salt of alumina, as aluminate of potash or soda, instead of free alkali. An equally good result is however obtained by mixing free alumina, in dry powder, with melted soap which has been manufactured in the ordinary way. M. Bonnamy proposes to use alumina also in various cosmetics, and especially in cold-cream, and he moreover regards it as affording an admirable base for tooth-powders, by reason of its complete neutrality, and the case with which it can be tinted by means of perfectly innocent coloring matters.

ANILINE AS A TEST FOR THE ADULTERATION OF LINEN BY COTTON.

A method of using aniline as a means of ascertaining whether or not the linen in any fabric is mixed with cotton, and, if so, in what proportion, is given by Bottger in a recent number of the "Chemisches Central Blatt." At the corners of one end of a strip of the fabric to be tested he loosens the threads so as to expose both the warp and the woof. He then dips that end of the strip in an alcoholic solution of aniline red, washes it in water until the washings are colorless, and then places it in an aqueous solution of ammonia. If any cotton is present, the ammonia will discharge the color from it without touching the color of the linen portion. The linen threads will remain of a bright rose color, but the cotton threads will become quite white.

ON SCIENTIFIC EXPERIMENTS IN BALLOONS.

BY JAMES GLAISHER, ESQ., F.R.S., ETC.

The *London Artisan* publishes a long letter by Mr. Glaisher giving the results of his numerous observations in balloons on the temperature and moisture of the atmosphere, and other matters of interest; from which paper we take the following statements:—

DECREASE OF TEMPERATURE WITH ALTITUDE.

WHEN THE SKY WAS CLOUDY.

Feet.	Feet.		Deg.		Feet.
From 0 to	1,000	the decrease was	4·5	or 1 deg. on the average of	223
From 0 to	2,000	"	8·1	"	247
From 0 to	3.000	"	11·8	"	255
From 0 to	4,000	"	15·2	"	263
From 0 to	5,000	"	18·5	"	271
From 0 to	6,000	"	21·7	"	277
From 0 to	7,000	"	34·4	"	287
From 0 to	8,000	"	26·8	"	299
From 0 to	9,000	"	29·0	"	311
From 0 to	10,000	"	31·0	"	321
From 0 to	11,000	"	33·0	"	329
From 0 to	12,000	"	35·6	"	337
From 0 to	13,000	"	37.8	"	344
From 0 to	14,000	"	40·1	"	349
From 0 to	15,000	"	42·1	"	356
From 0 to	16,000	"	44·2	"	362
From 0 to	17,000	"	45·4	"	375
From 0 to	18,000	"	46·7	"	386
From 0 to	19,000	"	48·1	"	395
From 0 to	20,000	"	49·0	"	409
From 0 to	21,000	"	50 1	"	4 9
From 0 to	22.000	"	50·9	"	432
From 0 to	23,000	"	51·7	"	445

WHEN THE SKY WAS CLEAR, OR CHIEFLY CLEAR.

Feet.	Feet.		Deg.		Feet.
From 0 to	1,000	the decrease was	6·2	or 1 deg. on the average of	162
From 0 to	2,000	"	10 9	"	184
From 0 to	3,000	"	14 7	"	204
From 0 to	4 000	"	18·0	"	223
From 0 to	5 000	"	20 9	"	239
From 0 to	6,000	"	23·5	"	259
From 0 to	7,000	"	26·0	"	271
From 0 to	8,000	"	28·7	"	279
From 0 to	9,000	"	31·2	"	289
From 0 to	10,000	"	33·6	"	298
From 0 to	11,000	"	35·6	"	309
From 0 to	12 000	"	37·9	"	317
From 0 to	13.000	"	40·1	"	324
From 0 to	14,000	"	42·1	"	333
From 0 to	15,000	"	43·8	"	343
From 0 to	16,000	"	46·0	"	348
From 0 to	17.000	"	47·9	"	355
From 0 to	18,000	"	49·6	"	363
From 0 to	19.000	"	51·1	"	372
From 0 to	20,000	"	52·4	"	382
From 0 to	21,000	"	53·6	"	392
From 0 to	22,000	"	54·7	"	405
From 0 to	23,000	"	55·7	"	413
From 0 to	24,000	"	57·0	"	422
From 0 to	25,000	"	58·1	"	431
From 0 to	26.000	"	59·1	"	441
From 0 to	27.000	"	60·1	"	449
From 0 to	28,000	"	61·0	"	459
From 0 to	29 000	"	61 8	"	469
From 0 to	30,000	"	62.3	"	482

These results, showing the whole decrease of temperature from the ground to 30,000 feet, differ greatly, as just mentioned, from those with a cloudy sky.

The numbers in the last column, showing the average increase of hight for a decline of 1° of temperature from the ground, to that elevation, are all smaller than those with a cloudy sky at the same elevation. Each result is based upon at least seven experiments, taken at different times of the year, and up to this hight considerable confidence may be placed in the results; they show that a change takes place in the first 1,000 feet of 1° on an average in 162 feet, increasing to about 300 at 10,000 feet. In the year 1862 this space of 300 feet was at 14,000 feet high, and in 1863 at 12,000 feet. Therefore, the change of temperature has been less in 1863 than those in 1862, and less in 1864 than in 1863, but the experiments have all been taken at different times of the year.

Without exception, the fall of 1° has always taken place in the smallest space when near the earth.

MOISTURE OF THE ATMOSPHERE.

After giving long tables of his observations, Mr. Glaisher thus sums up the results:—

The law of moisture shown in a cloudy day is a slight increase from the earth to the hight of 3,000 feet, and then a slight decrease to 6,000 feet, the degree of humidity being at this elevation nearly of the same value as on the ground; from 6,000 feet to 7,000

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eet there is a large decrease, and then an almost uniform decrease to 11,000 feet; it increases from 12,000 feet to 16,000 feet, and then decreases. The number of experiments up to 11,000 feet vary from 10 to 33, and I think good confidence may be placed in the result to this elevation, but at hights of 12,000 feet the number of experiments are evidently too small to speak with any confidence in respect to the results.

The law of moisture shown in a clear sky is a slight increase to 1,000 feet, a considerable increase between 1,000 feet and 2,000 feet, a nearly constant degree of humidity from 2,000 feet to 5,000 feet, and a gradual decrease afterward to 12,000 feet. At greater hights the numbers are less regular. The results up to 11,000 feet are based upon experiments varying from 10 to 23, and are most likely very nearly true normal values; at hights exceeding 12,000 feet the number of experiments have varied from 1 to 8, and no general confidence can be placed in them.

By comparing the results from the two states of the sky, the degree of humidity of the air up to 1,000 feet high, is 15 less with a clear sky than with a cloudy; from 2,000 to 5,000 is from 4 to 6 less; at 6,000 feet the air with a clear sky is much drier than at 5,000 feet, but with a cloudy sky it is nearly or the same degree of humidity, so that the difference between the two states is large, amounting to no less than 11; the difference decreases to 0 at 9,000 feet, but increases to 4 at 11,000 feet; at hights exceeding 11,000 feet the air with clear skies generally becomes very dry, but wih cloudy skies frequently becomes more humid, as was to be expected from the fact of the presence of clouds at hights exceeding three and four miles.

In both states of the sky at extreme elevations the air becomes very dry, but, so far as my experiments go, is never free from water.

CAUSE OF THE MILD WINTERS IN ENGLAND.

The meeting ot a strong current of air from the south-west of so great a depth as nearly one mile, over our country on January 12th, in the season of winter, which current I know continued many days, must have exercised great influence. This was the first instance of meeting with a stream of air of higher temperature than on the earth; above this the air was dry, and higher still it was very dry; fine granular snow was falling thickly above this warm stream of air.

The south-west current being thus observed is of the highest importance, as bearing upon the very high mean temperature we experience during winter, so much higher than is due to our position on the earth's surface, and it is highly probable that to its fluctuations the variations of our winters are due.

Our high winter temperature has hitherto been referred for the most part to the influence of the heated water of the Gulf Stream; but if this were the case the same agency being at work around the coast of France should exercise the same influence, yet we know that the winters of France are more severe than our own, though situated so much south of us.

Dr. Stark, of Edinburgh, some years since, referred the mildness of the winters in Britain for the most part to prevalence of the south-west or anti-trade wind, which is the prevailing aerial current in this latitude during winter.

He observes, so long as these winds blow, we have no frosts or intense colds; but the moment the wind changes during winter to an easterly, north-easterly, or northerly direction, we have both frost and snow, and more or less intense cold.

The south-west winds in their course meet with no obstruction in coming to us, but they blow directly to us and to Norway over the Atlantic; and hence we enjoy a much milder climate during winter than any other lands not similarly situated with regard to such winds.

The south-west winds cannot reach France till they have crossed the whole of Spain and the high mountain range of the Pyrenees; and by the time they have crossed that mountainous country they are so much cooled that France can derive comparatively little benefit from them, and hence apparently her more severe winters.

Another fact may be inferred from this winter trip: it has always been a matter of great difficulty for me to account for the simultaneous appearance of dense fog over the whole country and extending far out to sea, but the fact of a warm current of air, situated under a mass of snow falling, would fully account for the production of any amount of fog.

Another inference may be drawn from the facts noticed; one only I will mention, and it is this: If during the prevalence of a warm current of air passing over these islands, there can be currents of air of so low a temperature as I experienced, it is evident that, as it is but a struggle between two or more forces, either of which may preponderate at any moment; it is not safe, therefore, in the winter months, how mild soever the weather may be, to go thinly clothed at any time, for any moment this warm current may be deflected, and its place occupied by the cold current, and thus some of our sudden and apparently unaccountable changes may be due.

CURRENTS OF WIND IN DIFFERENT DIRECTIONS AT VARIOUS ELEVATIONS.

1862.—JULY 30.

[The direction of the wind before starting was N. W.]

At 4 h. 41 m. 16 sec., at	480 feet, the direction of the wind was	S. W.
At 5 h. 17 m. 30 sec., at	5,1 5 feet, "	N. N. W.
At 5 h. 40 m. 30 sec., at	6,183 feet, "	N.

1862.—SEPTEMBER 1.

[The direction of the wind before starting was E. N. E. verging to E.]

At 5 h. 4 m. 0 sec., at	3,268 feet, the direction of the wind	E. N. E.
At 5 h. 10 m. 0 sec., at	3,318 feet, "	E.
At 5 h. 11 m. 30 sec., at	3,560 feet, "	E. S. E.
At 5 h. 17 m. 0 sec., at	3,580 feet, "	E. N. E.
At 5 h. 36 m. 0 sec., at	4,190 feet, "	W.

1863.—MARCH 31.

At 4 h. 58 m. 0 sec., at	18,302 feet, the direction of the wind	N. E.
At 4 h. 58 m. 30 sec., at	17,097 feet, "	S. W.
At 5 h. 12 m. 0 sec., at	20,865 feet, "	nearly W.
At 6 h. 15 m. 0 sec., at	4,441 feet, "	S. E.
At 6 h. 16 m. 0 sec., at	5,168 feet, moving back again.	

1863.—JULY 11.

[Before starting the wind was E.]

At 4 h. 59 m. 30 sec., at	2,633 feet, the direction of the wind was	N.
At 7 h. 14 m. 0 sec., at	1,876 feet, "	E.
At 7 h. 56 m. 45 sec., at	1,020 feet, "	S. E.
At 7 h. 57 m. 0 sec., at	1,000 feet, "	W.

1864.—JANUARY 12.

At 2 h. 9 m 0 sec., at	655 feet, the direction of the wind was	N. E.
At 2 h. 14 m 0 sec., at	1,328 feet, "	E
At 2 h. 11 m. 0 sec., at	1,51[illegible] feet, "	S. W.
At 2 h. 32 m. 0 sec., at	5 401 feet, "	S.
At 3 h. 3 m. 0 sec., at	8,086 feet, "	S. S. W.
At 3 h. 20 m. 0 sec. at	10,017 feet, "	S. S. E.

Interesting Details of Animals Traps.

The English Society for the Prevention of Cruelty to Animals recently offered a prize of $200 for a more humane vermin trap, to which invitation no less than 126 competitors have responded by sending in for exhibition and judgment to the Royal Horticultural Gardens, South Kensington, every possible variety of ingenious device for outwitting mice, rats, stoats, weasels, polecats, grimalkins of the domestic species having their predatory instinct unduly developed, foxes, owls, hawks, and all other creeping and flying things, which dare to gratify tastes that they have in common with that stupendous monopolist—man. Some of the traps are most elaborate pieces of workmanship; others are altogether as primitive in their construction, descending in simplicity to one consisting of a few pieces of cardboard sitched together with a needle and thread. To judge from the different character of the contrivances, the society were not very exact in their definition of a "humane" vermin trap. Some of the exhibitors take the view which probably, all things considered, is the correct one, that humanity in dealing with a "varmint" is to kill it outright with as little suffering as possible. Others seem to think that humanity consists in "catching 'em alive, oh," leaving the final disposition as a matter for future consideration. Amongst the pleasant conceits of the former class of theorists were several modifications of the principle of the guillotine. Some of these had a fixed lower blade, by the side of which a moveable upper blade descended with the deadly force imparted by a strong spiral spring. Many varieties of dead-fall traps were exhibited, some depending merely on the weight of the falling block to smash the wretched vermin that found their way in; others in which the inventors showed their "humane" proclivities by thickly studding the lower side of the block with sharp steel spikes, the effect being to make the victim for the time a pin cushion. It only required to have these spikes arranged in the "welcome little stranger" [refers to the way in which pins are stuck on cushions in the form of letters.—EDS.] form to make the grim humour of the thing complete. It would be tedious to attempt to recapitulate the variety of gin traps, dead-fall traps, pit-fall traps, live-bait traps, through run traps, and self-setting traps included in the number exhibited. No. 4, the invention of Mr. Smith, is a most ingenious modification of the pitfall trap, applicable to animals of all sizes from a mouse to a lion. It consists of a balance weighted half-sunk cage, into which the animal jumps to reach the bait from a solid platform. His weight causes the cage to descend, and on his passing out by a hole in the side into a pen from which he cannot return, the cage rises for the next comer. The simplest, the cheapest, the most generally applicable, and the most readily made, is an improvement on the old figure of four trap, invented by James Miles, gardener to C. Woodd, Esq., of Rosslyn House, Hampstead. It consists of a box or hurdle, supported by two sticks, which are held together by a slit cut in the side of a twig carrying the bait. Any one could prepare such a trap with a pocket knife in a few minutes. It can be made to catch a mouse or a mastiff dog, to act as a live trap or as a dead fall; it might remain set for months in a corner without its efficacy becoming impaired from exposure, and is as efficient as it is simple.—*Trade Circular.*

Benzol in Canadian Petroleum.

In a note to a long and interesting paper on certain hydro-carbons obtained from petroleum, read before the Royal Society, on April 6th, by Mr. C. Schorlemmer, of Owen's College, Manchester, it is stated by that gentleman that he has found "a not inconsiderable quantity of hydro-carbons of the benzol series in Canadian petroleum." He first found traces of these compounds in some petroleum oils upon which he was experimenting, and which he supposed to be American. Pelouze and Cahours, however, state positively that the American petroleum used by them did not contain hydro-carbons of the benzol family. Knowing, therefore, the marvelous accuracy with which all experiments have been carried out by these famous chemists, Mr. Schorlemmer thought it not impossible that there had been some accidental or intentional mixture. He accordingly endeavored to procure an authentic specimen of crude Pennsylvania petroleum, but unsuccessfully, as none had come into the Liverpool market for several months. He, however, succeeded in getting some real Canadian rock-oil, in the shape of thick, black liquid, having a very unpleasant odor. He distilled it, and treated the portion, boiling below 302° F. (150° C.) with concentrated nitric acid, which acted upon it with great violence. The acid liquid was then diluted with water, and heavy nitro-compounds separated, possessing the characteristic odor of bitter almonds, belonging to nitro-benzol and its congeners. These were treated with tin and hydrochloric acid, and the solution obtained distilled with caustic potash. The aqueous distillate, in which drops of an oily fluid, possessing several of the properties of aniline, were found, gave, with a solution of hydrochlorite of lime, the most distinct violet color, showing, without question, that aniline was present. The test was further affirmed by the addition of a few grains of bichloride of mercury, which formed rosaniline crimson. There can be no doubt, therefore, that Canadian petroleum contains the series of benzol compounds, which, as our readers know, form the starting-point of the aniline dyes. The importance of this discovery depends, in a great measure, upon the amount of benzol compounds to be obtained from Canadian petroleum; and we could have wished that Mr. Schorlemmer had given us a more definite idea of the amount of these bodies contained in the crude oil than "a not inconsiderable quantity." When will chemists give up the use of such terms as "a little," "a small amount," etc.? Whether the American oil will yield these bodies remains to be proved, and we should advise those of our readers who possess authentic specimens of American oil—and there must be many such—to try the very simple series of experiments necessary to prove the presence or absence of these important hydro-carbons.—*Chemist and Druggist.*

FATE OF ASSASSINS.—Harold, Payne, Atzerodt and Mrs. Suratt, having been found guilty of the crime of assassinating President Lincoln, were executed on Friday, the 7th inst., in the city of Washington. Dr. Mudd, Arnold and O'Laughlin have been sentenced to imprisonment and hard labor for life, and Spangler to six years' imprisonment and hard labor in the Albany penitentiary.

MANUFACTURE OF IRON.—Mr. F. Seebohm of Dusseldorf, proposes to manufacture iron with 25 per cent refuse iron pyrites, 25 per cent manganese ores, 35 per cent ironstone, and 15 per cent lime. The mixture is melted in a blast-furnace, with hot or cold blast, in the ordinary manner.

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Improved Funnel and Measure Combined.

There are, unhappily, innumerable careless persons in this world who never put anything in the same place twice, and who drop whatever utensil they may have in hand just where they were using it. To such individuals the measure and funnel combined, here illustrated, will prove convenient, for it is impossible to misplace it or detach it from the vessel it is used with. This article combines the advantages of a vessel or measure with a funnel for decanting liquids, so that no waste occurs in emptying the measure into the funnel, and none from the funnel, as the fluids pass into the bottle or demijohn.

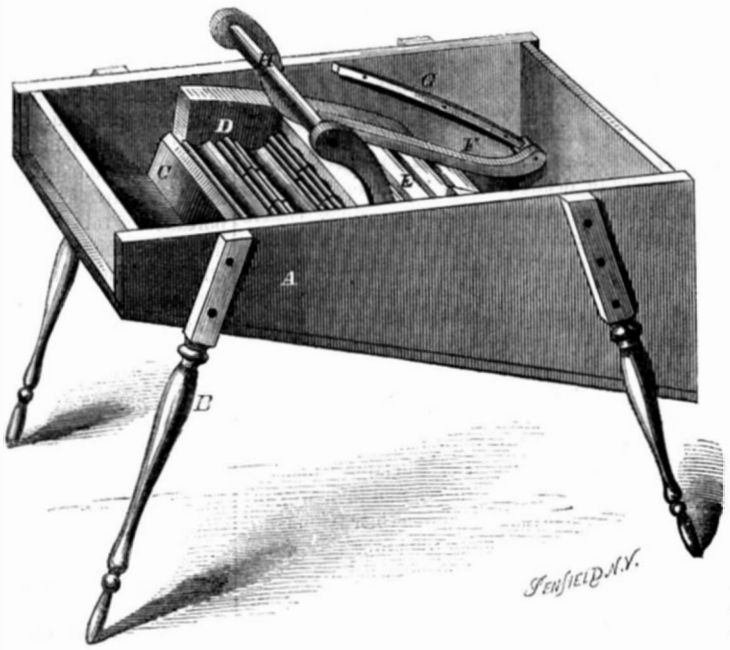
DUMMER'S FUNNEL AND MEASURE COMBINED.

The engraving shows the several uses it may be applied to The measures are graduated on the sides and furnished with a guard at the top from which a spout protrudes. This spout is to be inserted in the demijohn, as shown, and the measure elevated, in which position it can be left until empty; it is not necessary to hold it as the measure sustains itself. It is claimed that fluids of all kinds can be more economically measured in this vessel than in others, and that there is a saving in labor and the cost of utensils from the combiinng two articles, which are usually separate, in one.

This funnel was patented through the Scientific American Patent Agency on April 5, 1864, by S. R. Dummer. For further information as to sale of rights, etc., address the agent, Mr. Harry McBride, 174 Washington street, New York.

Improved Washing Machine.

A good washing machine is one of the most desirable things in a family, for there is no more fatiguing employment in housekeeping than cleaning the linen. This machine is designed to imitate the motions and action of the hand, on the garments to be cleaned, and is so arranged that the work is spread out before the operator in full view, thus rendering it possible to direct the attention to the part which may require it the most, instead of wasting labor on the whole, miscellaneously.



BUCKWALTER'S WASHING MACHINE.

The machine, in detail, consists of a water-tight case, A, having legs, B, and an inclined rubbing board, C. This board has grooves in it which carry rollers, D, also grooved. Over the top of these rollers there is another rubbing board, E, which consists of a series of slats grooved diagonally across their length; one end of the board is provided with arms, F, which slide on guides, G, so as to make it uniform in action. The top rubbing board is capable of being raised up vertically to accommodate the clothing to be washed, and at the same time it can be slid back and forth over the surface of them. Clothes to be washed are placed between the rubbing boards, and the case is partly filled with hot suds. The operator then takes hold of the handle, H, and pulls and pushes it alternately to and fro, thus subjecting the linen to a thorough cleansing process analogous to that given in washing by hand and performing the labor in a short time.

This machine was patented through the Scientific American Patent Agency on May 9, 1865, by Henry L. Buckwalter. For further information address H. L. Buckwalter & Co., at Kimberton, Pa.

Agricultural Machinery.

The farmers of our Eastern States, compelled to till rocky and uneven lands, and used to small holdings, do not know, by experience, all of the changes which improved machinery has wrought in agricultural operations on the great Western prairies. There machines do the labor of men to such a degree that the farmer's heaviest toils are lightened, and one man is enabled to achieve, with ease, the work of half a dozen.

We saw, recently, a corn field of one hundred and sixty acres, on the Grand Prairie, in the plowing, planting and cultivation of which no man walked a step. A rotary spader, drawn by four horses, and driven by a man upon the box, plowed the field to a uniform depth of eight inches, and gave such thorough tilth that it was not necessary to use a harrow at all. A corn-planter, drawn by two horses, and driven by a man upon the box, next planted the seed. A cultivator drawn by two mules, one walking on each side of the knee-high corn, and driven by a man upon the box, completed the culture of a row at a single operation; and in the cool-house lay another machine, also to be drawn by horses, which will cut down the corn when it is ripe and lay it in regular rows, to be finally gathered by hand. But it is expected that by next year this machine will be so improved as to gather up the corn also.

When it is remembered that the farmer who follows a common plow or cultivator during a long summer's day, performs a march of from ten to fourteen miles, it will be seen what a boon is the machinery which relieves him from this toil. And when we remember how scarce were men during the last four year in the West, we shall see that but for such labor-saving implements our vast crops of cereals could neither have been planted nor gathered.

The farm of which the cornfield we speak of was a part, has seven hundred acres in a single field of timothy. Of what use would this be if it had to be cut by hand? But half a dozen harvesting machines sufficed to cut it all, in good time, and will do, without groaning, the work of half a regiment of men; patent horse-rakes gather it up; and two hay presses upon the place compress it into bales fit for shipping. Seventeen and a half miles of board fence inclose a little more than half of this farm, which has, as part of its furniture, comfortable sheds for ten thousand sheep, a corn crib, rat-proof, holding fifteen thousand bushels of corn, and extensive stabling for horses.

What machinery has thus done for the West it will do for the South, now that free labor is substituted for that of slaves. There is no reason why the cotton and sugar fields of a great part of the South should not be tilled by machinery. These fields are, in Louisiana, Mississippi, and indeed in almost the whole of the cotton and sugar region, level and devoid of rocks, and these are the only conditions necessary to the successful use of the most valuable farm machinery. The slaves, ignorant and careless because they had no interest in the work, used only the rudest and clumsiest tools; but in the hands of intelligent freemen, the rotary spader, or the steam plow, or cultivator, can be used as well on the immense level bottom lands of Louisiana, where sugar is grown, as on the prairies for corn and wheat.

Yankee ingenuity, too, will presently set itself to work to devise new implements for the more economical and rapid prosecution of such labor as cotton-picking and cane-cutting. The next ten years will witness an immense revolution in the methods of cultivating the great staples of the South; and the fruits of that change will be a greatly increased production of cotton and sugar by the help of free labor, and—what the use of machinery always brings with it—such increased rewards for intelligent labor as will prove, even to the most ignorant of the Southern population, the importance of schools and the pecuniary value of education.—*New York Evening Post.*

Effects of Heat in the Preservation of Wine.

Burgundy is much improved by a voyage to and from Calcutta. This fact led the author to try the effects of warmth on wines at home, and both he and M. Pasteur have come to the conclusion that wines may be much improved by gently warming them, and that sick wines may be cured by the same means. M. Pasteur has, in fact, taken out a patent for warming wines by placing the bottles in a hot-air stove, with the corks tied down, to prevent their being forced out by the expansion. The bottles must be quite full, and have no air in them, and are heated to 64° C. for half an hour, after which the cork is untied, driven home, and sealed down. In the process just described, of course all parasitic ferments are destroyed, and the wine keeps well after it.—*M. de Vergnette-Lamotte.*

To Keep Eggs.

Eggs, says a farmer's wife, can be kept for two years by dipping them in a solution made of one pound of quick lime and one of salt to one gallon of water. Take an old pail and put in your lime and water, and then stir until it is all dissolved, then add salt as above (keep it in the cellar); when cool enough, it is ready to use. Dip in the eggs, and see that they are all covered with the solution, which must be stirred from the bottom occasionally. Pack them, small end downward, in bran or salt, or without anything. When wanted for use or market, a little warm water will wash them clean. Some dip eggs in boiling water, some grease them and pack them in bran. I packed fifteen dozen (as I could gather them) in August in salt, and kept them until spring just as good as fresh. They must all be kept in a cool cellar a little moist rather than dry.

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Erosion of Lead.

The erosion of lead, and even of type metal, by certain species of insects, is not generally known, and may be extremely mischievous. Not long ago it attracted the attention of the French Academy of Sciences, and several communications respecting it have been published with their proceedings in the *Comptes Rendus*. Of these the following is a *resumé* :—

In 1858 Marshal Vaillant exhibited to the Academy leaden bullets brought back from the Crimea, in some of which the larvæ of insects had excavated circular passages three or four millimetres in diameter, and in others superficial grooves. Inquiry was made through the Russian Ambassador, M. de Kisselef, whether similar erosion had been observed in Russia. M. V. de Motschulsky replied that nothing of the kind had been detected in the cartridges of the Russian army in the Crimea, and that the insect which had caused the injury appeared to be very rare in Russia, not having been discovered by Russian entomologists in the Crimea. It is stated to be very common in England, Sweden and Germany, and to occur in the Jura in France. It attacks silver firs and pines.

The insect which damaged the French cartridges was imported from France in the wood of the cases in which they were packed. All the excavated passages were originally circular in section, and those that were semicircular in section, that is, superficially grooved, were only segments, of which the other half was in the contiguous surface of other bullets or of the wood forming the sides of the cases. The passages were always open at both ends. Excavation was effected by the mandibles of the insect, the apparatus consisting of a saw toothed, and cut like a file. The insects do not eat the lead, but simply bore it out; and it was observed that their remains, after metamorphosis, had been carried downwards by the particles of the metal, reduced to powders, and dispersed on the outside through the cracks in the bottom of the packing case. The perfect insects did not attack the lead, but died in the passages, even immediately after their complete metamorphosis, as very often occurs with insects in general.

In 1833 Audouin exhibited to the Entomological Society of Paris, sheet lead from the roof of a building deeply grooved by insects. In 1844 Desmarest mentioned erosions and perforations of sheet lead by a species of Bostriche, and illustrated the fact by cartridges from the arsenal at Turin. Mr. Westwood, the well-known British entomologist, has recorded observations by himself on the perforation of lead by insects. M. Bouteille, curator of the Museum of Natural History at Grenoble, sent to the French Academy of Sciences, from the collection under his charge, specimens of cartridges gnawed by insects, which were found *in situ*, and the following report upon the subject was made by Marshal Vaillant, de Quatrefages, and Milne Edwards; the insect was *Sirex gigas*, a large Lymenopterous species which, in the larva state, lives in the interior of old trees or pieces of wood, and which, after the completion of its metamorphosis, quits its retreat for the purpose of reproduction. As previously stated, it cuts its way by its mandibles, gnawing the woody substance or other hard bodies which it meets with in its course. Analogous perforations are made by the mandibles of the *Callidium saguineum*. The reporters add;—"If it is probable that it is always with their mandibles that coleopterous as well as hymenopterous insects thus attack lead or other hard bodies, it is not well established that it is always the desire of liberty which prompts them so to act. Indeed, in some cases, coleopterous insects have been seen to gnaw the exterior of similar bodies."

Reference was made to a paper by Antonio Berti on the perforation of leaden pipes by an insect named *Apate humeralis*.

Scheurer-Kestner, in 1861, communicated to the French Academy a notice of the erosion by an insect of the sheet lead of a new sulphuric acid chamber. The creature was caught in the act of escaping through the lead, having been imprisoned between it and a wooden support.

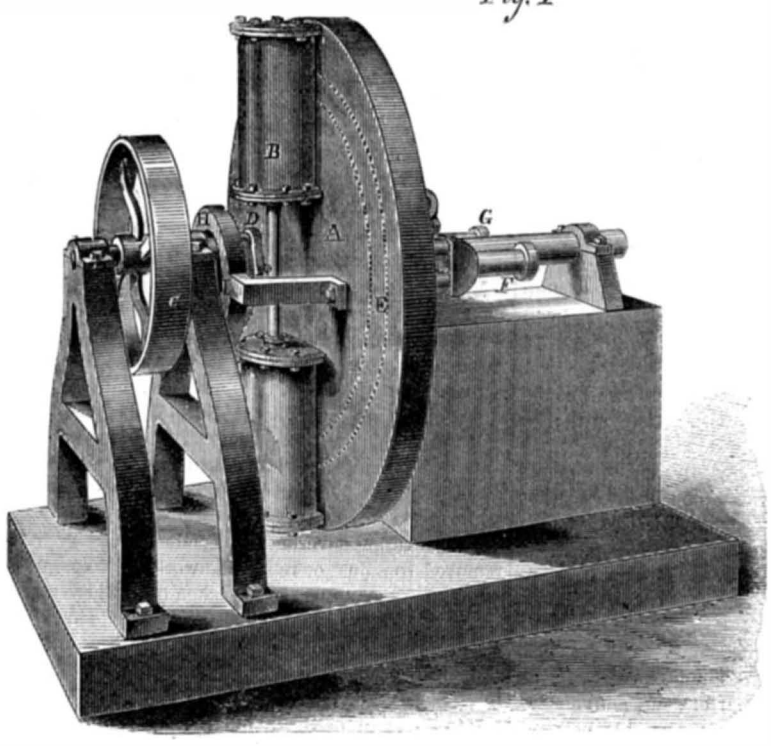
Perhaps the most interesting and important case of insect erosion is that of stereotype metal, which was communicated in 1843, by M. du Boys to the Agricultural Society of Limoges. Specimens riddled with holes were shown in illustration.—*American Annual Cyclopedia.*

Double-cylinder Revolving Engine.

Rotary engines, in one form or another, have occupied the attention of inventors for many years, and changes in the form or details of them, with a view to render them economical and efficient, are continually being made.

The engine here illustrated is not a rotary engine, inasmuch as the pistons in such machines travel continuously in one direction, but this combines a reciprocating motion of the piston with a rotary one of the cylinder, and adds the weight and momentum of that detail to the force exerted by the piston.

Fig. 1



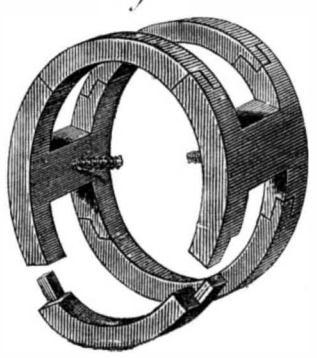
FOSTER'S DOUBLE-CYLINDER REVOLVING ENGINE.

The following description will render the principle and main parts familiar to the reader:—

The wheel, A, on which the cylinders, B, are placed, is set below the center of the shaft and pulley, C, half the length of the stroke. When, therefore, steam is admitted to the pistons, they, on being forced out, act against the crank, D, and turn the cylinders and wheel around.

The steam is let into the cylinders by the ports, E,

Fig. 2



shown in dotted lines through the steam pipe, F, and the exhaust pipe is at G. There are two branches to both of these pipes, and when steam is let into one, by turning a valve the engine revolves in one direction, and is reversed by admitting steam to the other branch. It is intended to have two sets of cylinders, or four in all, the piston rods crossing each other at right angles, and one pair of cylinders set further from the shaft in order to allow the rods to work on different cranks on the same shaft. The yoke, H, is fitted to a bearing, I, thus distributing the labor on the main shaft. By having four cylinders there is no dead center, and the force is continuous at all times.

Fig. 2 shows the packing rings, which keep the wheel steam tight at the point where the steam is introduced. These rings fit in a circular chamber behind the wheel, A, and are made in sections so that the entire chamber will be prevented from losing steam by the expansion of them in every direction. The cylinders are lubricated by a cup on the steam pipe. This engine, says the inventor, is particularly useful for propellers, on acc ount of the ease with which it may be reversed and the velocity of piston it is capable of attaining. It is also claimed to be simple and efficient, and that two revolutions of the pulley are obtained from one reciprocating movement of the pistons.

A patent is pending on this engine through the Scientific American Patent Agency by Joseph L. Foster, of Virginia, Nevada Territory. For further information address him as above, Box 153. [See advertisement on another page.]

Cutting Hard Steel.

The Secretary of the Franklin Institute, Henry Morton, Esq., in a recent report says:—

We give, for the benefit of those interested in the experiment, the particulars of the apparatus lately constructed for the Franklin Institute, to repeat Perkins' experiment of cutting hardened steel with a soft iron disk rotating at a high velocity. A disk of steel, such as is used for circular saws, but annealed so as to be very soft, is mounted on a steel spindle, which carries also a three-inch cast iron pulley, and the whole is then carefully balanced until it will rest indifferently in any position, on two straight edges.

This spindle, etc., is then mounted in cast iron swiveled bearings. A belt, 2 inches, wide, on the pulley is driven from a 36-inch pulley on an ordinary shaft, which carries also a 10-inch pulley, to which motion is given by a 4-inch belt from a 48-inch pulley on the engine shaft. The engine was run 120 revolutions per minute, which would give, with every allowance for "slip," between 5000 and 6000 revolutions per minute to the disk. At this velocity the hardest files were cut like soft wood, with the production of a blaze of light and showers of sparks, without the least injury to the edge of the soft disk.

The constructors of this apparatus were kindly furnished by Mr. Joseph Saxon, of Washington, with a general description of the machine originally made by him for Jacob Perkins in London, and in the above mentioned apparatus this description was followed, except where the improvements of modern machinery, warranted a deviation. The most important of these deviations was in the use of cast iron swivel bearings. In these the mobility of parts necessitates an equal distribution of the pressure and friction, over the whole surface of contact, and thus renders possible the use of a material otherwise so unfit as cast iron. The friction is in fact by this means brought between the steel and oils, and in no respect between the solid surfaces, at any point.

AMERICAN ANNUAL CYCLOPEDIA.

The fourth volume of this great work, containing the register of the important events of 1864 is now before us. It gives a very full account of the operations of the army and navy, illustrated by maps and cuts, with the proceedings of Congress, public documents, obituaries of eminent persons, and other matters constituting a complete history of the year. It is a volume of 838 pages, full of reading, interesting at the present time, and of inestimable value for future reference. It is published by D. Appleton & Co., 443 and 445 Broadway, New York.

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Correspondence

The Way to Bleach Sponges.

MESSRS. EDITORS:—I have noticed lately in your paper articles respecting the bleaching of sponges but the method described does not agree with my experience. In one of them chlorine is used; but this substance will bleach animal matter yellow—never white, and in a free gaseous state is very apt to destroy the animal fiber. Sulphurous acid will bleach animal matters white without injuring them, but it takes a long time to bleach sponges with this gas. As I have had opportunity enough to bleach sponges, I will communicate my process to you, by which any one may do the thing correctly.

I combine the two agents—chlorine in the form of chloride of lime, and sulphurous acid in the form of sulphide of soda. Messrs. Tennant, Glasgow, Scotland, import the best chloride of lime. Sulphite of soda is easily prepared in the following manner:—Take 42 ounces of crystallized carbonate of soda, spread it on some paper in a moderately warm and dry place, where it will soon be converted into a fine white powder by losing its water of crystallization, and will then weigh only one pound. Mix it well with 10 ounces of flour of sulphur, and put this powder in a flat cast-iron vessel with a rounded bottom; put the vessel on a slow fire and stir with an iron stick; by and by the powder will commence to bake into lumps and a light blue flame will spread through the whole mass; remove from the fire and continue to stir for two or three minutes, then cover with an iron lid; after five minutes remove the cover and stir again for some time; repeat this as often as a flame again appears, and then let it cool. Dissolve the mass in two gallons of warm water and filter through paper. This solution is pure enough for bleaching.

Before bleaching the sponges must be cleaned, as they often contain a good deal of sand and always more or less small sea shells. The sand is best removed by beating the sponges with a light stick and by shaking them. The shells are dissolved in water containing the twentieth part of muriatic acid, in which the sponges are immersed for two or three hours and then washed in clean water.

Now the solution of chloride of lime has to be made. Dissolve one pound of chloride of lime in two gallons of cold water, triturating the lumps well with a wooden stick—no iron must come in contact with this solution—stir thoroughly for ten minutes, and then let the solution stand till it is clear. Decant from the sediment and pour another gallon on the same; stir and let it settle again, then add the decanted fluid to the first. The dissolving is best done in a stone vessel, and the same are best for bleaching. Besides the two vessels containing the bleaching liquids, another one of about the same capacity—say two gallons—is wanted for diluted sulphuric acid; fill this about three-fourths full of water and pour in, under constant stirring, six ounces of sulphuric acid.

To bleach the sponges, immerse them first in the acid water; squeeze them with a pair of broad wooden tongs, as the different solutions affect the skin very much, and immerse them in the solution of chloride of zinc for two minutes. Squeeze the liquid in the same vessel and put the sponges back in the sour water, squeeze out again and immerse in the solution of sulphite of soda for a short time; squeeze again, and put it in the sour water. Repeat the same operation two or three times till the color is gone and then wash well in clean water, and dry in the open air. On the place where the sponges were fastened is oftentimes a dark brown spot; it is best to cut this out, it will not bleach. GUSTAVUS A. SCHMIDT.

Swatara, Pa., June 30, 1865.

Manufacture of Mainsprings in Watches—A New Idea.

MESSRS. EDITORS:—There is no practical watchmaker who is not familiar with the difficulty of procuring a good mainspring—one that is sufficiently strong, permanently elastic and not liable to break. I wish to make a suggestion through the medium of your paper, which, by meeting the eye of some thinking spring maker, may lead, in some measure, to the correction of this difficulty. All springs, now in use, are made flat, like a narrow strip cut from the edge of a thin sheet of metal; and I am convinced, from careful investigation, that in more than nine cases out of ten, when a spring breaks, the fracture begins at one edge. Now it occurs to me that if the spring was made slightly convex on the outer and concave on the inner side, so that when it is coiled in the drum the convexity of one coil might fit into the concavity of the next, the object would be accomplished. This would give the spring much additional strength, so it might be made thinner, and consequently longer—all being desirable qualities. But the principal advantage which such a spring would possess over the common flat spring, would perhaps exist in its less liability to break. For the greatest tension of its metal would be at the center of the convex surface where a flaw would be less likely to occur, and a rupture more difficult to start than at the edge.

If some spring manufacturer will prove the plan successful, he will save the people from an immense tax for new springs. J. W. H.

Paoli, Ind., June 12, 1865.

Jacketing Steam Cylinders.

MESSRS. EDITORS:—If the advantages of jacketing the cylinder are as great as generally believed, may, we not reasonably expect increased economy would result from protecting all the steam passages of an engine. Many engines, as now built, with exposed steam chests and cylinder heads thickly covered with bolt heads and nuts, look more as though they were designed on the parlor-stove principle, to radiate the greatest quantity of heat rather than to preserve heat and convert it into motion.

The jacketing covering that portion necessary to be removed to adjust or repair the working parts might be so put on as to be readily taken off. There would be no necessity for finishing the covered parts further than to reduce the bolts heads and nuts to the proper dimensions, and true the surfaces which come in contact. The jacketing could be finished according to the taste of the manufacturer, and being attached to the engine in such a manner as to present a surface entirely free from bolt heads and like projections, there would be little difficulty in keeping it clean. Such an arrangement ought not to increase the cost of an engine; yet even if the cost should be increased a little, the investment would be a good one. We might then expect to see engines kept neater than the majority of them now are; there would be less excuse for an engineer if his machine was not clean. A saving of fuel would reduce the expenses of proprietors and lessen the labors of firemen; engine rooms would not be the ovens they now are, and promote the health and comfort of engineers.

J. H. F.

Heat and Force.

MESSRS. EDITORS:—I am of the opinion that your correspondent's explanation on page 260, current volume, of the difference between the amount of heat and equivalent mechanical force contained in combustible substances and that which can be practically obtained does not accord with all the facts which may be adduced. After attributing the loss to imperfect combustion, and the absorbtion of heat by the admission of too much air into the furnace, he concludes by saying, "that the true path for improvement would seem to be to select some substance to which heat can be applied at a greater intensity, and expand it to the temperature of things around us."

Take, for example, the amount of force developed by the detonation of gunpowder. Suppose a gun is charged with one pound of powder, and a shot weighing eight pounds, all the conditions being the most favorable for enabling the powder to exert its whole expansive energy in giving motion the to ball. The two ounces of carbon contained in the powder furnishes 1,750 units of heat, equal to 1,351,000 feet pounds, or equivalent to elevating eight pounds 31 miles. Hence should the gun be discharged vertically, making no allowance for atmospheric resistance, the shot should be projected 31 miles in perpendicular hight. In order to accomplish such a flight the projectile would require an initial velocity of upwards of 3,200 feet per second. That is about three times as high as that which would be practically attained, and to obtain it would require the application of a force nine times as great as would be developed by the deflagration of one pound of powder. In this instance the gases generated would be heated to a temperature of 5,000 degrees, which is ten times as intense as that of steam contained in the boiler of a steam engine. The combustion is perfect, and the amount of heat absorbed by the gun insignificant. Besides the very considerable amount of heat developed by the combustion of the sulphur has not been taken into account.

While the disparity is as great here as that observable in the working of a steam engine, the theory of your correspondent would have very little application. F. G. FOWLER.

Mechanicsburg, Ill., June 17, 1865.

An Engineer Puzzled.

MESSRS. EDITORS:—Gentlemen, as a constant reader of your paper and having done some business in the patent line through your office, I take the liberty of writing to you in regard to an answer I found in one of your late papers. It is this:—"C. H., of Pa. If your engine yields six horse power with 100 revolutions per minute and you increase the number of revolutions maintaining the same pressure, you will increase the power in proportion. 150 revolutions will give you nine horse power." A machinist who has charge of a shop and myself have had a long argument on that question. I maintain you are right and he contends you are wrong. He says the engine does not give out any more power, not a pound more than it did before making 100 revolutions. He contends the engine consumes it in extra friction; or he puts it in this way: An engine making 50 revolutions per minute; now suppose you increase it to 100, 150 or 200—you cannot drive any more machinery with it, as the power is consumed by the additional friction. He tries to prove this by a locomotive being only able with six feet drivers to make about a mile a minute empty, that is without any train. As he is considered by some of the men here as good authority on such matters I sincerely hope that you will reply through your paper and I think it will be the means of some more of the mechanics of this place taking your paper.

JOHN BOLTON.

Greenbush, N. Y., June 22, 1865.

P. S. The person referred to does not take your paper or I think he would know better.

[If all the power of an engine is consumed in friction, it would be better to let it stand still, and save the coal.—EDS.

A Third Kind of Clock with Invisible Works.

MESSRS. EDITORS:—No. 22 of present volume of your valuable paper is just received. The description it contains of "a curious clock" in San Francisco reminds me of a similar one I saw in New Orleans a few months since. It had also a glass dial, with a single, light, and very nicely balanced hand, but had no box or other mechanism on the short end of the hand, and no visible connection with anything but the pivot which passed through the dial. I asked if the movement was in the base on which the supports of the dial stood. The watchmaker said yes, but would give no further information. Upon looking as closely as permitted to, I saw a very small brass pulley upon the inside end of the pivot. This led me to think that it was connected with the movement by a very fine band of some gray-colored material, which the slight color of the glass shade and dial kept from sight. Possibly it might have been operated by nicely arranged magnets in the base, which could easily be done, but it was not moved by the method you describe. I have seen many other novel and ingenious clocks in that city. W. B. S.

Mobile, Ala., June 15, 1865.

Belts to Drive Flour Mills.

MESSRS. EDITORS:—Since reading the communication of J. H. Cooper on "Leather Belts," in your issue of July 1st, I am induced to send you the following:—Our engine is a 16-inch cylinder, two feet stroke, running 75 revolutions per minute with 80 pounds of steam. Belt 15 inches wide, driving pulley 8 feet diameter. The distance between centers of

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pulleys 24 feet; the pulleys are on horizontal shafting. The shaft carrying the driver's pulley is about 3 feet higher than the crank shaft. The driving pulley revolves towards the other bringing the "slack" part of the belt on top and between the pulleys causing it to cover more of the circumference of the pulleys than if run the reverse. We use no tightening pulley and the belt never slips. We drive with this belt a flouring mill of 3 "runs" of stone with all the necessary machinery; the engine is rated sixty horse power. Experience teaches me to use pulleys of large diameter, good lengths of belt and quick motion to transmit the greater power.

W. R. COOPER.

Sag Harbor, L. I., July 3, 1865.

The Lead Ball on a Steam Jet.

MESSRS. EDITORS:—The explanation requested in your valuable paper, No. 2, current volume, in regard to a bullet sustained and rotated by a jet of steam or water seems to me to be of no very difficult character. It is well known that every such bullet or ball has two centers, the center of dimensions or imaginary one, and that of weight or the real one, as no ball can be manufactured so true that the weight would be equally distributed around the center of dimensions. If now the center of weight should be on the right hand side of the imaginary center, the left hand side being lighter, receives the force of the steam in a greater degree, and will, therefore, be turned from left to right, and vice versa. If a ball could be so constructed that the imaginary would be the real center, or if it could be placed over the jet in such a manner that the two centers would be in a vertical line and exactly over the center of the jet, then the ball would certainly not rotate. That part of the jet which has not actually to support the ball rises above it and surrounds it, thereby preventing it from falling off, or rather, on account of its unevenness, from being thrown aside; the water or steam around it, possessing exactly the same power as that beneath. If the diameter of the jet is smaller than that of the ball it will certainly not balance the same, but will throw it aside there being no power left to prevent it from falling. A. V. BRIESEN.

New York, July 5, 1865.

Large Pulleys vs. Small Pulleys for Belts.

MESSRS. EDITORS:—I have been much interested in the various articles, communications, comments, etc., that have appeared in your paper on the power-transmitting capacities of belts. There is, however, one point that I think has not been touched upon, and that is the diameter of the pulleys over which the belts run. I think that a belt traveling at a certain rate per minute will give more power, without being so tight as to break out the lace holes or heat the shafting, when driven by a large pulley than by a small one; or in other words, that a belt will impart more power when drawing a four-foot pulley at fifty revolutions, than when driving a two-foot pulley at one hundred revolutions.

It appears to me that it would take double the amount of power to make the belt slip on the large pulley that it would on the small one, and that doubling the diameter of the driving and driven pulleys is equivalent to doubling the width of the belt.

J. J. W. R.

Brooklyn, July 4th.

Peculiar Action of Belts Running on Each Other.

MESSRS. EDITORS:—As you and your correspondents are at this time interested on the subject of transmitting power through belts I would suggest an idea for your consideration which is not generally known by those who peruse your valuable paper; thus two belts, one running over the other will convey more power through them than one alone would of the same tightness. If we stitch the two belts together, however, so that they have to move as one belt they will not drive more than one half the load that they would if left to run over each other, independently. ANDREW B. ARNOLD.

Newark, N. J, July 5, 1865.

[Mr. Arnold is a close observer of long experience in machinery and we place great reliance on his opinions. The case he mentions is an interesting one and doubtless occurs from the fact that where one belt runs on the other, both being detached, each retains its individuality and transmits the force due to its velocity and width; where both are stitched together they become one, with only the tension and friction due to their width, length and velocity. We shall be glad to have the opinions of our readers.—EDS.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Skate—This invention provides a means for keeping the feet warm while skating; and this is effected by arranging a heating chamber under the foot-plate of the skate, into which may be readily placed any heated substance or body, such as soapstone, or any heating medium, such as a burning lamp; and in this way the foot-plate of the skate is kept warm, and, consequently, the feet from becoming numb with cold, and thus the pleasure of skating, particularly in the case of ladies, is greatly enhanced. The inventor of this improvement is O. W. Tatt, of No. 60 Pine street, New York City.

Hand-washing Device for One-armed Persons.—Our recent war has suggested many improvements for the benefit and comfort of our soldiers, and this is one worthy of especial attention. Perhaps no person, unless he has lost an arm or hand, can fully comprehend the difficulty of washing his remaining arm and hand. The patentee of this invention has been afflicted with the loss of one arm, and his device answers the purpose for which it is intended in a very satisfactory manner. It consists in the use of a sponge, or other suitable material, fixed to the upper surface of an open frame fitted to slide in a bed-plate, capable of being attached to the side of a washstand or elsewhere, its position being inclined so as to permit any water expressed from the sponge to run off from it through a channel in the bed plate. The hand or arm may be soaped and rubbed upon the sponge, and in this way a thorough washing or cleansing thereof can be easily and quickly effected. The inventor of the above is Gustave Dieterich, of 37 Park Row, New York, who may be addressed for the purchase of the patent or rights to manufacture.

Forging Machine.—This invention relates to a machine for forging various articles, such as nails, file shanks, spindles, etc. The invention consists in the employment of two pairs of hammers arranged and operated so as to approach and recede from each other, alternately, in pairs, and using in connection therewith a stop mechanism, feeding and cutting device, and certain other parts, whereby a simple and automatically working device is obtained for the purpose specified. John C. Jewell, of Boston, Mass., is the inventor.

Breeching Hook for Carriages,—The object of this hook is to facilitate the freeing or letting loose of a horse from the shafts of vehicles in case of sudden accidents, and consists in a novel construction of the breeching hooks, whereby the breeching straps disconnect therefrom, simply through the forward movement of the horse within the shafts, the traces, however, first having been unhooked or otherwise disconnected. And in addition to the above this hook also enables the breeching straps to be fastened and unfastened with more ease and rapidity by hand than with the use of the old styles of hooks, and it is in every respect greatly superior to them. Edwin Brown, formerly of Leominster, but now of Boston, Mass. (care of Messrs. Chickering & Sons), is the inventor.

Grain Separator.—This invention relates to a machine for separating impurities from grain, and also for separating one kind of grain from another, such as oats from wheat, etc, and it consists in the use of a series of screens and discharge spouts arranged relatively with each other in such a manner that the grain will be subjected to repeated screenings and thoroughly cleansed from all impurities, and one kind of grain separated from another, a blast fan being used and also a peculiar feeding spout in order to render the operation perfect or complete. Julius Tomlinson, of Newburgh, Wis., is the inventor.

Buckle for Skates and Other Purposes.—This invention consists in providing supplementary bearings for the journals of the tongue of the buckle, which bearings are behind the bearings which hold the said journals when the buckle is in use, and are separated therefrom by a ridge, over which the journals pass, when the journals are to be moved from one to the other. The effect of this construction is to enable the tongue to recede from the front of the buckle where the bite is made on the strap, thereby releasing the strap without difficulty and without requiring that it be first pulled out from the loop of the buckle. B. S. Lawson, 294 East Broadway, New York, is the inventor.

Bending Metal Plates.—This invention relates to a device for bending metal plates, and is more especially designed for bending armor plates for ships and other war vessels, so that they may conform to any part of the sides of the vessel and fit snugly thereto. The invention consists in the employment of a series of adjustable bars in connection with patterns and clamps, constructed and arranged in such a manner that the bars may be very readily adjusted to form a curved or winding bed corresponding to any portion of the exterior surface of the hull of a vessel, so that each plate may, with the greatest facility be bent to conform to the portion of the vessel to which it is to be attached. John W. Easby, of Washington, D. C,, is the inventor.

Head Rest for Car Seats.—This invention relates to a head rest for car seats which can be readily attached to or detached from the seat without in the least degree injuring it, and is of such a form and construction as to admit of being carried in a traveling bag or even about the person. The advantages of this are of course manifest to all, as it promotes not only the comfort and ease of the person, but also relieves a journey of the tediousness usually attending it, and supplies a want heretofore long felt. W. R. Phelps, of Elizabeth, N. J., is the inventor.

Hand Stamp.—This invention relates to certain improvements in that class of hand stamps in which a chemically prepared or inked ribbon is used to furnish the types with the requisite supply of ink or other material to produce the desired impression. The invention consists, first, in the employment of an adjustable head carrying the reels on which the ink-prepared ribbon is wound, in combination with the longitudinally sliding stem to which the handle is attached, and with the type plate in such a manner that easy access can be had to the reels and ribbon, and that the head with the type plate can be turned on the stem in either direction according to the direction in which the impression is to be taken on the paper. The reels lie in cavities in the sides of the head, the end pieces of which form the bearings for the axles of the same. The type plate is secured to the head by a nick and segmental slot in combination with a friction spring, in such a manner that the same can be readily removed and replaced or taken out to change the types, and when in position it is not liable to work loose spontaneously. The table which supports the material on which the impression is taken is made adjustable and removable so that its hight can be regulated or that it can be taken off and replaced at pleasure. Horace Holt, of Brooklyn, N. Y., is the inventor, and has assigned his right to W. W. Secomb, 264 Broadway, New York.

Beater Press.—This invention relates to certain improvements in that class of presses in which the article or substance to be compressed and baled or packed is previously compacted in the press box by means of a beater which is so arranged as to serve the office of a beater and follower. The invention consists in a novel arrangement of levers and a rope in connection with a suitable windlass whereby a very compact and powerful lever arrangement for operating the follower is obtained. The invention also consists in an improved windlass so constructed and arranged that it may, by a very simple manipulation, be made to operate the beater or follower in either capacity, that is to say when worked as a beater or follower. The invention further consists in certain means for facilitating the heoping of the bale and its discharge from the press box. Loyal C. Field, Galesburg, Ill., is the inventor.

THE "American Sleeping Car Company," which proposes to "construct, run and operate," has just been incorporated by the Legislature of Connecticut.

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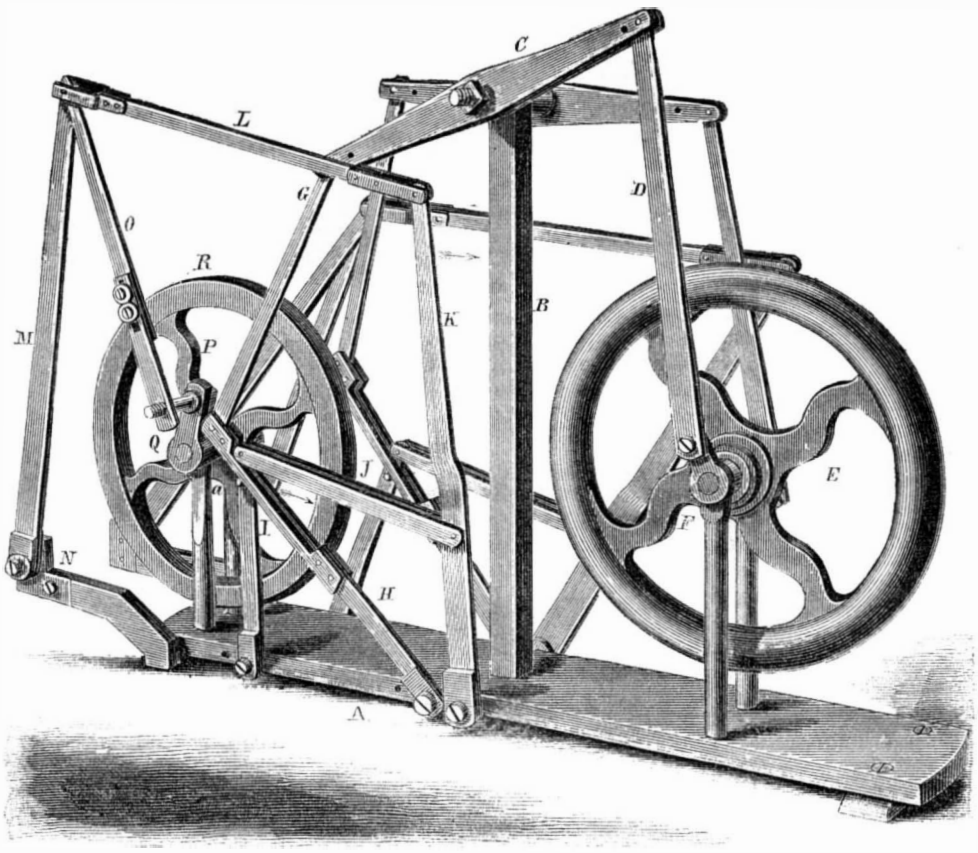
Improved Multiplying-power Machine.

The appended article is furnished by the inventors.

"This machine consists in a combination of toggle joints and levers. A represents a platform; B a standard forming the fulcrum for the working beam, C. The rod, D, connects a large heavy fly-wheel, E, mounted on a shaft, F. The other end of this working beam connects by a rod, G, with a lever, H, forming a toggle joint which rests on the supporter, I. Its lower surface forms an inclined plane, which rests on a stud, *a*, projecting from the sides of the supporter, I. The rod, J, forms the connection between the supporter, I, and the lever, K. This lever connects by a rod, L, with the lever, M, having its fulcrum on the end of the link, N. The rod, O, extends to the crank, P, secured to the shaft, Q, on which a second fly-wheel, R, is mounted. The rods, L and M, form a second toggle joint. This combination of the toggle joints and levers shows the remarkable property of gaining power and space at the same time, without loss of velocity, provided that all parts of the machine are in the proper proportion. Any moving force applied at the crank, P, of the second fly-wheel, R, brings the toggle joint, M L, out of its position, pushes the lever, K, forward in the direction of the arrow, sets the supporter, I, in motion, and raises the toggle joint, H G, and working beam, C, with constantly-increasing power, thus transmitting motion to the fly-wheel, E. The power gained by this machine is at the toggle joint, H G, equal to twice the force applied; at the lever, K, three times, and at the second toggle joint, L M, again twice; that is, in all, twelve times. Allowing one-third for friction, the gain in power is equal to eight times the force applied. By suspending weights from the fly-wheels on the model, it will be found that a weight of two ounces, suspended from the fly-wheel, R, is capable of balancing a weight of one pound, suspended from the fly-wheel, E, or eight times its own weight. This gain in power can be increased by the addition of toggle joints. The exact proportion of the space gained by this machine is, for all cases—3·515 : 4·240 : 2, or very nearly 3 : $\frac{4}{2}$—which formula cannot be explained at present for want of room. If the crank of the fly-wheel, E, has a length of 9 inches, the working beam must be raised 18 inches, but the supporter, I, has to travel only through a space of 12 inches; the lever, K, passes through 36 inches; the second toggle joint, M L, through 24 inches, and, consequently the crank of the second fly-wheel, R, must be only 12 inches long, that is, very little more than the crank of the first fly-wheel. From this it is evident that, by this machine, power and space is gained at the same time without loss of velocity, for as soon as the fly-wheel, R, is set in motion, the whole machine commences to work immediately.

"This machine can be used with advantage for increasing any motive power. For further particulars address the inventor, Henry Bickel, Elizabeth, N. J.



BICKEL'S POWER-MULTIPLYING MACHINE.

Cost of Stopping Railway Trains.

Much has been written about the cost of stopping a train of cars, from the great wear and straining of the machinery, rails and road-bed. A few years since the directors of a prominent railway became so impressed with the magnitude of the cost of merely stopping trains, that they discontinued several way stations where there was a very considerable traffic, withdrawing a good many trains from other stations, all to the serious inconvenience of the public and a very considerable loss of traffic to the company. In a discussion at an annual meeting of shareholders of a company, the chief executive officer stated that in his judgment, it cost a dollar for every stoppage of a common passenger train, and for through and express trains a larger sum. A somewhat matter-of fact shareholder entered into a computation of the number of stops made by the different trains on the road, and rather surprised the railway official by showing that the mere cost of stopping the trains of the road, according to the official estimate, was more than the entire gross receipts of the road for the year. This is what you may call running a theory into the ground with a vengeance. It is a very difficult and rather unsafe matter to estimate the cost of stopping a train of cars; but its difficulty does not seem to deter a great many persons from attempting it, and so we find different persons estimating it at from thirty cents up to two dollars per stop, all confident that they have found the exact sum. Any discussion of this matter, if it could be based upon exact facts instead of preconceived and erroneous theories might perhaps be valuable; but it seems rather difficult to get at facts, and our over careful directors and managers may take some comfort from the opinion expressed by the late Association of Railway Superintendents and Engineers of New England, who, after a long series of computations and observations, came to an almost unanimous opinion, that it would not cost, averaging all the railways and trains, more than 8 cents per stop. As the gentlemen who formed this association were careful and cautious in the statement of official opinion, and were certainly experts, in the best sense of the term, we think their evidence should hereafter prevent the propagation of the rather ludicrous estimates of men who have not made this and kindred matters a special study.—*Railway Times.*

Bandoline.

Many persons have a passion for smearing their hair with various substances so as to make it smooth and shiny. We give below a list of some compounds for this purpose which was published in the *Druggists' Circular:*—

1. Irish or Iceland moss, boiled in water, and the strained liquid perfumed.

2. Quince seed, $\frac{1}{2}$ teaspoonful; linseed, 1 tablespoonful, and a pinch of white mustard seed. Boil in a pint of soft water to half, and scent with oil of almonds.

3. Boil a table spoonful of linseed for five minutes in half a pint of water.

4. Isinglass, $1\frac{1}{2}$ oz.; water, 1 pint; proof spirit, 2 fluid ounces. Dissolve the isinglass in the water by heat, add the spirit, and scent with almond oil.

5. Tragacanth, 1 oz.; rose-water, 1 pint. Bruise the gum, digest for three days, and strain.

Any of these may be colored with cochineal if required.

Boot and Shoe Machinery.

We find the following letter in the *Shoe and Leather Reporter:*—

"I have been in the way of selling 'machine-made shoes,' both sewed and pegged, ever since they were introduced. And I have often asked myself the question:—'Will the time arrive when the sewing machine will supersede the old-fashioned mode of hand sewing in shoe-making?' and as often have I answered the question, in my own mind, at least, 'No, never,' till the inventive genius of our machine makers shall produce a more perfect machine, or the operators acquire more skill in running it, and our Eastern manufacturers more moral and business honesty than to insert for the foundation of their shoes 'shoddy leather' and 'pasteboard' for an inner sole. So far as my business experience extends, four-fifths, at least, of the 'machine-sewed shoes' I have sold, the soles have ripped off from the upper, say in three weeks to as many months; and what makes it more unfortunate for the wearer, from the insufficiency of the inner sole, the shoe cannot be repaired, thus becoming a dead loss to the owner. It is a thing of almost daily occurrence, that I have shoes of this description brought to my repairing shop to be mended, and what makes it infinitely more annoying, too frequently have to be subjected to hearing a string of curses, both 'loud and deep,' on the makers of such shoes."

INDUSTRIAL EXHIBITION IN GERMANY.

We are informed by Mr. Marsh, the American Consul at Altona, in Germany, that an international industrial exhibition will be opened at that place in June, 1866. A new system of awarding prizes will be adopted. Every machine will be practically tested, and a certificate issued to the inventor, owner or agent of each machine entered in competition, showing the comparative merits of the whole of the machines under trial in their several classes. Medals and diplomas will also be awarded to the best articles. There is also another feature of this international exhibition which adds to its general interest and makes it exceedingly attractive to American exhibitors; it is an exhibition of industry as well as agriculture and agricultural mechanics. Every article in use in rural housekeeping will be admitted at the Altona exhibition; also agricultural, horticultural and floracultural products; garden designs and lawn-furniture farm, dairy and cellar products, and cattle. The exhibition will remain open forty days. Those desirous of learning full particulars of this exhibition may address Mr. Louis Martin, care of Messrs. Austin, Baldwin & Co., 72 Broadway, New York.

THE work on the Pacific Railroad is progressing rapidly. The road will be completed to Topeka, 25 miles west of Lawrence, by the first of November.

THE *Great Eastern* was expected to sail with the Atlantic Telegraph cable on the 8th or 10th of July.

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THE

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VOL. XIII. NO. 3...[NEW SERIES.]....*Twentieth Year.*

NEW YORK, SATURDAY, JULY 15, 1865.

EIGHT HOUR SYSTEM—THE WAY TO GET IT.

At a meeting of the Polytechnic Association last winter, Professor Joy, who had just returned from Europe, described the manner in which the Italian peasants eat their hasty pudding. They gather around a flat stone, the pudding is poured out upon it, and they take up this food with their hands and eat it without either butter, molasses, or other sauce, all their meals being of the same pudding. The houses and clothing of these peasants are as cheap in proportion as their food. In Vol. I., New Series, we published a German scissors manufacturer's account of the manner in which his workmen live, and it will be remembered that these skilled mechanics are obliged to find their food, clothing, house rent and all other means of living on about 38 cents per day. The clothing of the Hindoo peasants is a strip of cotton cloth about the loins, and their food is plain boiled or parched rice. The Digger Indians of California subsist upon acorns and grasshoppers, dress with a bunch of grass about the hips, and live in caves dug in the ground.

At one time our ancestors lived as meanly as any of these. Why do they live so much better now? Simply because they have the art, the skill, the intelligence to produce the means of living in greater abundance. The German mechanic, the Italian peasant, and the Hindoo would like varied and well-cooked food, and all the conveniences of life, as well as any Englishman or American, but they do not know how to manage to get them. The Hindoo weaves his clothing by suspending his harnesses to the limb of a tree, and slowly passing his shuttle through the warp by hand; while the Englishman's clothing is woven by the power of water or steam, one girl tending four looms that run at the rate of one hundred picks per minute. Would there be any use in the Hindoo striking for a dollar a day? He can only make 2½ cents; and the reason is that this is the amount which his ill-directed labor produces.

The German scissors-maker spends half of his time in carrying iron and steel on his head over long miles of road between his village and the manufactory. On the other hand, the cutlery manufactories of England and America are arranged to economize to the utmost every step of the workman, and every stroke of his labor, and they are provided with all known engines, machines and appliances for aiding the labor and increasing the product. The consequence is that a day's labor of the English or American artisan produces twice as much cutlery as that of the German; and it will produce from 100 to 1,000 fold more value than that of the Hindoo or the Digger Indian.

In a system of hiring, wages constitute the share of the product which goes to the workman. In order that these may be large, the first step is to have the aggregate product large, in order that there may be a good deal to divide. This is effected by having the labor well organized, wisely directed, and aided to the greatest extent possible by tools, machinery and conveniences.

The next step is to secure as large a share of the product as possible for the workman. The proportion of the product which goes to the workmen depends mainly upon their economy. If a man has not money enough in his pocket to buy the next meal, he is completely subject to any man who will give him enough. One with ten dollars in his pocket is immeasurably more independent than one with only ten cents. Says Carlyle, "Any man who has sixpence is king over all other men—to the length of sixpence." If a mechanic has money enough to buy a lathe, or a set of tools, and to pay the rent of a room for a month, he may fix his own wages in his own independent way. Intelligence and the provident spirit which it engenders will not only raise the product of wealth in any community to the highest point, but it will draw the largest share of this product to the laborer.

If the eight hour system of labor is ever adopted, it will be commenced, as the ten hour system was, among the best class of mechanics. It will also be preceded by such an advance in wages that mechanics will be willing to abate one-fifth of the amount for the sake of two hours' leisure. The constant increase in labor-saving—or rather labor-doing—machinery, and the steady progress of education, with the temperance, frugality and thrift which are its accompaniments, are continually increasing the product of wealth and raising the wages of labor. We need only an uninterrupted operation of these forces to enable the workmen of this country at no distant day to command such an amount of leisure as to them shall seem good.

LEATHER BELTS.

The subject of belts and the peculiar action of them under certain circumstances and the conditions under which they work are of the greatest importance to mechanics and manufacturers. We print in this issue several communications from practical men which refer to some peculiarities not generally known or observed, and we deem it important enough to the arts to devote considerable space for a time to a full elucidation of the subject. We direct research and attention to some other features not yet remarked which may afford useful data to persons using power. We put these questions as follows:

Is a thick belt better than a thin one, or the reverse?

When belts stretch on one side, as they do from a looser texture of the leather, or from other causes, why do they run harder and run off? Why is it that some belts never will run straight on the pulley but twist like a corkscrew?

Is the hair side or the flesh side to be put next the pulley?

Is there anything better than neats foot oil for belting, to keep it in good order. Is a crowned pulley or rounded face necessary to make a belt run true? Some machines which run at high velocities have pulleys with flat faces. Why should a belt be laced straight on the inside and crossed on the outside?

KEEPING CISTERN WATER SWEET.

When water in cisterns becomes foul it is not from any alteration in the water itself, but from the decay or decomposition of organic matter held by the water in solution or suspension. These organic impurities are generally washed into the cistern from the roof. It has long seemed to us that the most simple and direct method of keeping cistern water sweet would be to allow the first portion of every rain fall to run to waste until the roof was thoroughly washed, and then to fill the cistern from a clean roof. A very simple apparatus might be arranged to effect this automatically. For instance one plan would be to set a hogshead near the lower end of the gutter pipe, with a short, light trough hinged to the pipe and leading into the hogshead; then have a float so adjusted that when the hogshead became filled with water, the trough would be shifted over to lead the water into the cistern. If one hogshead of water should not prove sufficient to wash the roof clean, the trough might be adjusted to conduct only half or quarter of the water passing through it into the hogshead, allowing the rest to run one side upon the ground. We do not know that this plan has ever been tried, and therefore offer it only as a suggestion.

It is common to filter cistern water, and it may thus be rendered perfectly sweet if the filtering be done through charcoal. Solon Robinson filters the water as it is pumped from his cistern by passing it through the walls of a drain pipe. The pipe is coiled around the bottom of the cistern, with one end closed and the other communicating with the pump; this is very simple and works satisfactorily.

Another plan is to make the cistern in two compartments, the water to be received in one and drawn from the other, and the dividing wall to be formed of vertical strata, alternately of sand and charcoal, through which the water passes from one compartment to the other. We should suppose that the most effectual of all plans would be to wash the roof thoroughly and fill the cistern with pure water. If any of our readers have tried this plan, or should any of them try it, we should be pleased to learn the result whether favorable or unfavorable.

GOOD WORKMANSHIP.

The character of work of any class whatsoever is made by its absolute fidelity and integrity throughout. It is not necessary to go through all trades to show that this is true, or that in general the highest priced is the best; for, all things being equal, greater pains has been taken in its construction.

A simple line or two in a late dispatch from Richmond says more in a paragraph than we could in a page; this said—"The furniture in the Spottswood House is still good after four years' hard service, although no opportunity for replenishing it from Northern workshops has occurred through the war." This furniture, it seems, was unusually elegant, but it was not the mere external finish which gave it character so much as the solid and substantial fitting of the several pieces.

If these remarks apply to furniture, how much more true are they when spoken of machinery, which does the heavy work of mankind.

A want of honesty in construction is sure to be found out and redound to the disadvantage of the maker. A half-way kind of a job, and a listless way of doing it, is sure to be detected.

Not unfrequently we see instances of haste and carelessness about steam engines which looks badly, and is an absolute loss to the manufacturer. The general excellence of American machinery is due to the care exercised in its construction. Colt's pistol factory has done more toward educating mechanics to walk the straight road, to do their work well, than any other similar factory in the world. The several sewing-machine shops—Wheeler & Wilson's in particular—and especially the Waltham Watch Company concern, are all schools for mechanics—schools where they not only learn but are "paid while learning," as specious advertisers say. Most wonderful progress in the art of working metals has been made in these shops. In the Waltham concern the nicety of the workmanship there executed is incredible, and must be seen to be believed or appreciated. Some of the screws we saw cut had 240 threads to the inch, and these were cut in an engine lathe with trains of gears as 5-8th bolts are, in a common machine shop. Other shops do larger work with equal accuracy, but none so fine as this.

We might cite innumerable instances which would go to prove the truth of the assertions here put forth, but it seems palpable that a reasonable amount of time, spent in finishing and fitting the most important parts of machines or structures of any kind, is not lost, but is absolute testimony to the fidelity of the maker.

INDESTRUCTIBLE LABELS FOR BOTTLES.—Coat the label with white of egg, and steam it until it becomes opaque; then dry it in an oven at 212°. The albumen becomes hard and transparent, and is unaffected by oils or acids.

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ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING JULY 4, 1865.

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☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

48,502.—Converting Rotary into Reciprocating Motion.—S. F. Ames, Stanford, Ky.:

I claim the combination and arrangement of rock shaft, A, the inclined plane wheel, B, the fly-wheel, C, shaft, D, and anti-friction rollers, a a, constructed, arranged and operating as and for the purpose herein described and set forth.

48,503.—Buckle.—Truman G. Bailey, Wassaic, N. Y.:

I claim the jaws, C D, with their inclined faces, C' D', and tongue or spur, G, arranged relatively to the inclosing strap, B', and parts, B E and F, or their equivalents, substantially in the manner and for the purpose herein set forth.

48,504.—Hydrant.—William Bailey, Troy, N. Y.:

I claim the detachable valve chamber, E, with its discharge pipe, M, inlet valve-seat and screw opened inlet valve, A, in combination with the fixed supply pipe, O, united to the said valve chamber by male and female screws, N, and arranged in the hydrant box, Z, Fig. 4, substantially as herein described.

And I also claim the valves, A and B, and screw, C, all fast together, in combination with the stationary screw nut, D, valve chamber, E, inlet passage, F, discharge pipe, M, waste opening, I, and valve seats, G and J, as herein described.

48,505.—Socket for Hoe, Chisel, Etc.—Geo. Banister, Hartford, Vt.:

I claim the method of forming the shank or stem on the part to which the socket is to be attached, and of uniting it to a sheet-metal band or ferrule, so as to form an additional layer of metal to give the socket an increased thickness and strength near the bottom or smaller part thereof, substantially as herein shown and described.

48,506.—Artificial Fuel.—R. B. Bayard, Philadelphia, Pa.:

I claim the combination of petroleum or rock oil with vegetable fiber and coal dust in about the proportions herein specified.

48,507.—Egg-holder and Packer.—O. T. Bedell, New York City:

I claim an egg-holder and packer produced from a disk or plate, A, provided with or without a central hole, a, and with a series of pockets, B, each capable of holding an egg, substantially as herein set forth.

48,508.—Top for Mucilage Bottle.—John W. Boughton, Appleton, Wis.:

I claim the combination of the compressible pad around the brush handle with the pressure cap, substantially as described and for the purposes set forth.

48,509.—Lubricating Material for Wool.—Henry Botemley, Camden, N. J.:

I claim the use for lubricating wool, preparatory to carding or spinning the same, of the secretion, extracted from the wool.

48,510.—Covering for the Head.—Thomas Bracher, New York City:

I claim as a new and improved article of manufacture a covering for the head made of open wove wire cloth, combined by adhesion with the material to form the outer surface of the hat, bonnet, etc., substantially as described and for the purposes specified.

48,511.—Sewing Machine.—E. F. Bradford and L. L. Barber, Boston, Mass.:

We claim, First, The thread feed, in combination with a hook or barb needle, either with or without an awl, substantially as described.

Second, The employment of the feed finger, B, in combination with a hook needle and awl, substantially as and for the purpose described.

Third, Arranging the end of the feed finger, B, so as to slide and act upon the double thread or loop, within a slot or hole in the sewing plate, and with its upper surface either just below or flush with the surface of the plate, substantially as and for the purpose described.

Fourth, The combination and arrangement of the finger, B, with the hook needle, F, and automatically rising presser foot, D, substantially as and for the purpose described.

48,512.—Sulky Plow.—James Brewer, Albany, N. Y.:

I claim, First, Making one of the standards, E E, with the plow beam in its proper position, yielding to a certain degree, for the purpose of permitting the plow to pass obstructions which are in its line, and which are too hard to cut, substantially as and for the purpose specified.

Second, The combination with the plow beam of the rigid standard, F, yielding standard, E, screw bolt, o, and spring, p, substantially as and for the purposes specified.

Third, Hanging the plow beam of a sulky plow between two standards in such a manner that the operation of the plow is not affected by the passage of the supporting wheel over rough or uneven ground, as and for the purposes specified.

Fourth, In combination with the plow and its beam, G, herein described, of the laterally adjustable castor wheel, H, when fastened to the rear of the plow beam, substantially as and for the purposes specified.

Fifth, Connecting the hound in the furrow side to the pole by means of a hinge, s, for the purpose of making it and the furrow wheel adaptable, as and for the purposes specified.

Sixth, The combination with the foot lever, L, and plow beam, G, when capable of rotation within the standards, I, of the friction rolls, q, as and for the purposes specified.

Seventh, In combination with the plow beam, G, and tongue, P, the adjustable breast yoke, Q, for the purpose of cutting more or less land, as herein described.

48,513.—Breeching Hook for Vehicles.—Edwin Brown, Leominster, Mass.:

I claim, First, The construction of a breeching hook, by combining with a fixed standard a rigid hook swinging upon said standard, as described, so that the breeching strap shall be released by the displacement of the hook, substantially as herein described.

Second, In combination with a fixed standard and movable hook, I claim a spring actuating the hook, and located in relation to the hook and standard, as described.

48,514.—Dumb Bell.—D. P. Butler, Boston, Mass.

I claim the series of movable shells held together and to the spindle or handle by a halved joint on each set of shells, and a screw, g, passing through the center of each shell and into the spindle, substantially as set forth.

I also claim the sectional handle, b, made in two parts, fitting upon and detachable from a central spindle, a.

Also, The employment of the rings, k, interposed between the handle and shells, for increasing the length of the handle, substantially as set forth.

48,515.—Machine for Boring Wells, Etc.—Malcolm Campbell and Job H. Cole, Philadelphia, Pa.:

We claim corrugating or otherwise indenting the contact surfaces of the lifting cam and drill stock, so that the lifting will be positive and without liability to slip, substantially as described.

We also claim hanging the lifting-cam shafts in adjustable and self-yielding boxes or bearings, as and for the purpose described.

We also claim, in combination with the drill stock and its lifting cams, the counterpoise, P, for aiding in raising the drill, when, from its extreme length, it becomes very heavy, and to equalize the force with which it falls, substantially as described.

48,516.—Machine for Making Sheet-metal Pans.—Chas. F. Chambers, Hutsonville, Ill.:

First, I claim the angling rollers, E E', or their equivalents, placed at any suitable inclination, to press the sheet-metal from the center outward, as described and set forth.

Second, The set screws, m m' and c, or their equivalents, for throwing the operating forms out of line with the remaining one, substantially as described.

Third, In this composition I claim the gage, O, when attached to the gate, D, for the purpose of regulating the depth of the pans, in the manner set forth.

48,517.—Pipe Coupling.—James Chambers, Boston, Mass.:

I claim a pipe-coupling, composed of two or more sections of a cylinder, having their contiguous edges provided with cleats or tenons, h h, and fastened by keys, F F, provided with dove-tail wedge-shaped mortises, m, or their equivalents, substantially as set forth and for the purpose described.

48,518.—Cast-iron Steam Generator.—John Chilcott, Brooklyn, N. Y. Antedated June 21, 1865:

I claim a steam generator, composed of tiers of arch-sided polygonal cast-iron water and steam tubes, arranged substantially as herein described, to form flues between the tiers.

48,519.—Machine for Stacking Straw.—D. M. Cochran and A. Gear, Richmond, Ind.:

We claim, First, The combination of a folding straw stacker, which is constructed of sections, with the hanging posts or beam, B, and rod, j, when these are used for confining and supporting the stacker in transportation or in operation, substantially as herein described.

Second, The combination of the guard or side boards, e', of the section, D, with an adjustable stacker, and the box, A, of a thrashing machine, substantially as described.

Third, A hinged or pivoted deflector, H, applied at the discharging end of the stacker, substantially as described.

Fourth, The hinged apron, H', in combination with a device or devices, for protecting the straw from the wind at its point of discharge from the stacker, substantially as described.

Fifth, A folding sectional stacker, which is susceptible of being elevated or depressed without leaving wind openings at the side of the lowest section, and which is arranged and combined with the rear end of a thrashing machine in such manner that it can be folded beneath the same, substantially as described.

48,520.—Flour Sifter.—D. C. Colby, New York City:

I claim, First, The use of the shaft, B, provided with one or more rows of the strips, g g and h, in combination with the box, A, and the seive, I, and with or without the screen, m, substantially as described and for the purposes set forth.

Second, I claim the combination and arrangement of the box, A, the standards, D D, the rod, k, and the strips, E and F, as and for the purposes set forth.

48,521.—Chuck for Lathe.—S. J. Cone, Middletown, Conn.:

I claim the use of the V-shaped split ring, D, applied in combination with the head, A, and chuck, B, in the manner and for the purpose substantially as set forth

[This invention consists in the employment or use of a split metal ring, V-shaped on its inner edge to fit into a corresponding screw at the inner ends of the wooden chucks and provided with a screw-thread on its circumference to screw into the metal head calculated to hold the chucks in such a manner that in order to attach a chuck to a metal head nothing is required but to furnish its inner end with a screw corresponding in size and shape to the V shaped split ring. A stud projecting from the inner circumferenee of one half the split ring and catching in a corresponding hole in the wood prevents the ring from slipping while the chuck is screwed on the metal head.]

48,522.—Apparatus for Boiling and Evaporating Saccharing Liquids.—D. M. Cook, Mansfield, Ohio:

I claim, First, The construction of cellular or tubular boilers, substantially in the manner and for the purposes described.

Second, The combination of one or more perforated or imperforated ledges, with cellular or tubular boilers, substantially as and for the purposes described.

Third, Constructing a tubular or cellular boiler with finishing cells or chambers, substantially as described.

Fourth, The combination of two or more cellular or tubular boilers, arranged substantially as and for the purposes described.

Fifth, The combination of a lid or cover with a cellular or tubular boiler, substantially as described.

Sixth, The construction of a cellular boiler with a bottom plate, C, or its equivalent, substantially as described.

48,523.—Baling Press.—Waldo P. Craig, Milton, Ky.:

I claim, First, The tumbling box, H, substantially as described and set forth.

Second, The arrangement of tumbling box or trunk, H, trunnions, h, slots, e, and abutment, E', substantially as set forth.

Third, The combination of the U-formed clamp irons, M M', tie bars, N N', and grooved clamp boards or slabs, K K', when constructed and employed as specified.

48,524.—Well Drill.—Amos Crandall, Great Bend, Pa.:

I claim the combination and arrangement of the drill, D, rimmer, R, shaft, S, and buckets, B B B, constructed and operating substantially as and for the purpose set forth.

48,525.—Egg Beater.—Moses G. Crane, Boston, Mass.:

I claim the combination of the rotary spindles, A, the series of curved wires or arms, a a a and c, the pinions, B and B', and the sectral gear, C, the same being arranged so as to operate together, substantially as described.

48,526.—Smoothing Iron.—John W. Currier, Holyoke, Mass.:

I claim the combination of the block, A, with the parts, B C and G, in a flat or smoothing iron for the purpose of holding the block, A, and forming a double air space around it, substantially as described.

48,527.—Segar.—Darius Davison.—New York City, assignor to Oliver Davison, Lansingburg, N. Y.:

I claim, First, Forming the wrappers or cases of segars of two or more distinct pieces wound spirally around the spindle towards the cone-shaped end thereof, in reverse directions, one upon the other, and formed and finished at the cone-shape end, substantially in the manner and for the purposes before described.

Second, Combined as a whole, I claim the making, forming and finishing segars, substantially as herein described.

48,528.—Corn Planter.—Frank Dean, Beloit, Wis.:

I claim the slide, A, in combination with the roller, F, cone, E, and ring, H, arranged and operating substantially as described.

48,529.—Steam Engine.—B. Demming and D. Arcy Porter, Cleveland, Ohio:

We claim the valves, C D, when arranged and operating in connection with four ports, in the manner and for the purpose before described.

Second, We claim the arrangement of the cam, L, and levers, H K, in combination with the valves and valve rods, substantially as and for the purpose set forth.

48,530.—Trestle Bridge.—Andrew Derrom, Patterson, N. J.:

I claim, First, Securing the cap-piece to the legs of a trestle to be used for bridges, etc., by means of one or more wedge-shaped pieces driven into the same from the under side thereof, substantially as herein described.

Second, The adjustable feet for the trestle-legs arranged upon the same, substantially as herein described and for the purposes specified.

[For an illustration and description of this invention see page 303, Vol. XII., of the SCIENTIFIC AMERICAN.]

48,531.—Screw Bolt for Fastening Railroad Chairs.—Richard James Dewhurst, New York City:

I claim the bolt with the screw part thereof formed substantially as described, as a new article of manufacture.

48,532.—Coal Breaker.—John A. Dickson, Scranton, Pa.:

I claim the construction of rings bearing teeth separated from each other by rings without teeth as above described and for the purposes herein pointed out.

48,533.—Hand-washing Device for one-armed Persons.—Gustave Dieterich, New York City:

I claim, First, A rubbing or washing surface composed of a sponge or other suitable porous substance fixed to a frame with an open or perforated bottom, substantially as and for the purpose above described,

Second, I also claim in combination the perforated plate for holding a sponge or other flexible material with a bed plate upon which it may be fitted by sliding in grooves or otherwise, substantially as described.

48,534.—Machine for the Manufacture of Aerated Bread.—John Danglish, M. D., Reading, Eng., assignor to Steuben T. Bacon, Boston, Mass.:

I claim the process or method of operation, substantially as described.

48,535.—Hoop Cutting and Bending.—Jacob Dobbins, Litchfield, Mich.:

I claim the rotating knives, G, K, and guides, M M', in combination with the rollers, H N, for bending the hoops as they are cut, all substantially as and for the purpose set forth.

[This invention relates to a new and improved machine for cutting hoops for barrels, casks, etc., and it consists in the employment or use of two circular knives, arranged with guides and rollers, whereby the work may be done rapidly and in a perfect manner.]

48,536.—Metallic Cartridge Case.—Wm. C. Dodge, Washington, D. C.:

I claim a cartridge case for small arms composed of ductile metal, and coated or plated, internally, or both internally and externally, with tin or other suitable metal or alloy of metals, substantially as and for the purpose herein set forth.

48,537.—Clothes Dryer.—J. P. Dorman, Galesburg, Ill.:

I claim a series of bars, a and a', arranged parallel and at right angles to one another constituting two or more arms, B B, substantially in the manner and for the purpose herein described.

Second, Arms, B B, upright plate, D, bracelet plates, d d, and hinged plate, b, so constructed and arranged as to be readily detached from the post when desired, substantially in the manner and for the purpose described.

48,538.—Machine for Bending Metal Plates.—John W. Easby, Washington, D. C.:

I claim the combination of the patterns, E E, adjustable bars, C C C, running transversely of the said patterns, the clamps, D D, and bed plate, A, all constructed, arranged and operating in the manner and for the purposes specified.

48,539.—Self Inflator for Raising Sunken Vessels, Etc.—Temperance P. Edson, Cambridge, Ill.:

I claim the herein described inflator when constructed, applied and operating as and for the purpose set forth.

48,540.—Heat Radiator.—Alfred Edwards, Chicago, Ill.:

I claim the combination of the heating chamber, D, provided with inlet and outlet tubes, b c, with the cylinder, B, and circular plate, C, arranged and operating as and for the purposes shown and specified.

48,541.—Propelling Wheel for River and Canal Boats.—Horace Fenton, Cleveland, Ohio:

I claim the adjustable wheel, A, arms E and slots, g, in combination with gearings, C D, and friction rollers when arranged and operating conjointly, substantially as and for the purpose set forth.

48,542,—Corner or Joint for Soapstone Stoves.—James H. Flagg, Perkinsville, Vt.:

I claim the corner piece of stoves for holding the sides of the stove and its linings together cast in one and the same piece, substantially as herein described.

[This invention relates to the construction of corner pieces for soapstone stoves, whereby a strong and firm stove is secured, and one which can be readily put together and taken apart, when so desired.]

48,543.—Escape Valve for Pumps.—Edward A. Floyd, Macomb, Ill.:

I claim the slide, D, constructed as shown and described, operated by the stem, F, and spring, u, as and for the purpose herein set forth.

48,544.—Shoemaker's Float.—J. W. Foard, San Francisco, Cal.:

First, Constructing shoemakers' floats so that the cutters are separate from the stock and are held therein by means of a clamping screw, substantially as above described.

Second, I also claim making the cutters, C, with double faces substantially as described.

[This invention consists in a new construction of shoemakers' floats for removing pegs and nails from the inner surfaces of the soles of boots and shoes. The cutting parts are made separate from the handles. They are also made with cutting surfaces of steel on both their faces, and also so attached to their handles as to be readily turned over or changed when one of said surfaces becomes dull.]

48,545.—Clothes Wringer.—H. G. Folger, Wadsworth, Ohio:

I claim the above described arrangement of the adjustable clamps, G, levers, L, pawls, h, arm, B, end pieces, A, bearings, b, springs, I, and brace, D, for the purposes set forth.

48,546.—Saw Gummer.—A. K. Foster, Halletsville, Texas:

I claim the grindstone, D, with the adjustable bar, F, sliding bar H, and with the levers, J K, and clamp or jaw, L, or their equivalents all arranged in connection with the saw, M, to operate substantially in the manner as and for the purpose herein set forth.

[This invention relates to a new and inproved saw gumming machine of that class in which a grindstone is employed for performing the work. The invention consists in using in connection with a grindstone an adjustable and a sliding bar and levers one of which is provided with a jaw or clamp, and all the parts so arranged as to admit of the work being performed in an expeditious and perfect manner.]

48,547.—Piston Packing.—Andrew Fulton, Pittsburgh, Pa.:

I claim the construction of the packing of a piston so as to operate as herein described, by arranging uncut hard and soft metal rings, b c b c, of the wedge form described upon a hub, A, and between heads, B D, one of which is adjustable lengthwise of the rod, C, the said soft and hard metal rings being disposed in the order substantially as described all for the purpose set forth.

48,548.—Expanding Drill.—Franklin Cleason, Philadelphia, Pa.:

I claim the plate, C, provided with the oblique grooves, d, at opposite sides fitted within the stock, A, and adjusted by means of the nut, F, on the screw of the shank, b, or an equivalent means, in connection with the cutters, D D, fitted in the cylindrical part, B, of the stock and connected to the plate, C, by pins, g, fitting in grooves, d, substantially as and for the purpose set forth.

48,549.—Steam Engine.—William Golding, New Orleans, La.:

I claim the radius arm, G, applied in combination with the connecting rod, b, crosshead, a, link, F, and trunk, E, substantially in the manner and for the purpose herein shown and described.

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[This invention consists in the application of a radius arm in combination with the connecting rod, crosshead and link connecting said crosshead with the trunk of a trunk engine in such a manner that by the action of said radius arm the vibrations of the link in the trunk is diminished and the diameter of the said trunk can be considerably reduced and at the same time the trunk is relieved of the friction and the cutting liable from the pressure of the connecting rod.]

48,550.—Washing Machine.—Ebenezer Gordon, Cedar Rapids, Iowa:

First, I claim the combination of the supporting frame, I, the rollers R, the semicircles, F', the rubbing bars, G, provided with exterior surfaces the cross bar, F, the journals, c c, and slots, a a, arranged as and for the purposes specified.

Second, I claim the combination and arrangement of the box, A B, the removable supporting frame, I, the rollers, R, corrugated blocks, D, rubber, E G, and handle, H, operating as and for the purposes specified.

48,551.—Field Marker for Planting.—William Goltry, La Grange, Iowa:

I claim the combination of two or more runners or markers, A A, with each other and with the connecting bars, B and C, by means of pivot pin, c c', substantially in the manner and for the purpose herein set forth.

I also claim, in combination with the pivoted markers, A A, and connecting levers, B C, the lever, D, pivoted to the bar, B, and operating substantially as herein described.

48,552.—Coating for Oil Vessels.—Stuart Gwynn, New York City:

I claim the new article of manufacture constituting a tight oil essel, lined or coated internally as described.

48,553.—Railway Car.—William Smith Hall, Quincy, Mass.:

I claim the employment of the ratchet mechanism, when operated to start the car by a chain winding upon a crank shaft or pulley, substantially as set forth.

Also the method of disengaging the pawl from the ratchet, substantially as shown.

Also combining with the starting apparatus a brake mechanism operated by foot, substantially as shown and described.

48,554.—Box, Ship, or Mast Scraper.—Chas. W. Harris, Philadelphia, Pa.:

I claim constructing a box scraper of the form substantially as described.

48,555.—Door Bolt. Wm. H. Hart, New Britain, Conn.:

I claim making the barrel of a door or shutter bolt of one piece of sheet metal, punched, formed and secured to the plate, d, substantially as described.

48,556.—Graduated Faucet Measure.—Geo. H. Henkle, Middletown, Ohio:

I claim. First, The frame, D E B, in combination with the measure, A, arranged and operating in the manner and for the purpose substantially as described.

Second, I also claim the faucet constructed in the manner described, in combination with the measure, A, to operate in the manner and for the purpose described.

48,557.—Combined Rake and Reel Attachment to Harvesters.—R. Hoffheins, Dover, Pa.:

I claim, First, Constructing a combined rake and reel so that the rake is independent in its revolutions of the reel upon a support which is mounted upon the hinged cutting apparatus of harvesting machines, substantially as herein described.

Second, The construction of the support, H, for the combined rake and reel, substantially as described.

Third, Securing the required motions for the rake by connecting it to a revolving ring or yoke or coupling, and to a revolving wheel, J, which are arranged in different planes, and applied to a central shaft or axial support, substantially as described.

Fourth, The manner substantially as described of connecting the rake to its drawing wheel, J, by means of a spring bar, or its equivalent, for the purpose set forth.

Fifth, The arrangement of the four gear wheels, J, q p p', with the combined but independently revolving rake and reel, substantially as herein described.

Sixth, In a rake and reel combined, the rake revolving independently of the reel around the axis of the shaft which carries or drives the reel, I claim providing for stopping and starting the rake without disturbing the reel, and without stopping the machine or harvester, substantially in the manner herein described.

Seventh, The combination of the driver's seat of the harvester, independently revolving rake, independently revolving reel, and stopping and starting contrivance of the rake, substantially in the manner and for the purpose described.

Eighth, The combination of the extensible and flexible or jointed shaft, S, independent rake, and independent reel, substantially in the manner and for the purpose described.

Ninth, Connecting a rake which turns around the shaft, L, to opposite sides of a revolving device, k, which serves as a hinge, on two sides of the shaft, L, for the rake to play up and down upon, and also as a coupling which permits the rake to revolve independently of the reel, substantially as herein described.

Tenth, The combination of an independently revolving rake an independently revolving reel, sliding clutch wheel, q, or its equivalent, and the hinging or coupling device, k', or its equivalent, substantially as and for the purpose herein described.

Eleventh, A rake which revolves or turns independently of the reel around the shaft, L, which drives or carries the reel during its entire circuit, substantially as and for the purpose described

Twelfth, The arrangement, with an independently revolving rake and an independently revolving reel, of a contrivance for stopping and starting the rake without stopping the reel, substantially as described.

Thirteenth, Constructing a combined rake and reel in such manner that the rake and reel have independent motions of one another, although the rake moves around the shaft which carries or drives the reel, substantially as described.

Fourteenth. An independent revolving reel mounted upon a hinged cutting apparatus of a harvester, in combination with a revolving rake, substantially as described.

Fifteenth, The arrangement in a harvester of the independent reel, independent rake, hinged cutting apparatus, and stopping and starting apparasus, substantially as described.

Sixteenth, An independent reel and an independent rake combined, both moving in a similar direction, but in different paths, about a common axis or shaft, substantially as herein described.

Seventeenth, The combination of an independent revolving rake, which is sustained at only one end, with an independent revolving reel or gatherer, which is also sustained at only one end, in such manner that the rake always maintains a position below the reel, substantially as described.

Eighteenth, The combination with a harvesting machine constructed with two driving wheels, a jointed cutting apparatus, an independently revolving rake, and an independently revolving reel—the reel and rake being mounted on the cutting apparatus—of an adjusting contrivance, which is so arranged that the driver, while riding on the machine, can adjust the cutting apparatus and the rake and reel, without stopping the machine, substantially as described.

Nineteenth, The combination of a hinged curved frame, hinged cutting apparatus, independent revolving rake and independent revolving reel, substantially as described.

Twentieth, The arrangement of the indepsndently revolving rake and independently revolving reel upon a jointed cutting apparatus at a point forward of the axle, a, and to one side of the drive wheel, A1, substantially as and for the purpose described.

Twenty-first, The arrangement in a two-wheel harvesting machine of a hinged supporting frame, C, a jointed cutting apparatus, a revolving reel or gatherer, and a rake with attachments or connections by which the attendant of the machine, while riding thereon, can control its motions, substantially as herein described.

Twenty-second, Combining a rake and reel or gataerer in such manner that the former revolves around the axis of the latter, and also independently of it, and can be stopped and started at the will of the operator while he is riding upon the machine, substantially as described.

48,558.—Padlock.—Abraham Huffer and Nathaniel Sehner, Hagerstown, Md.:

We claim, First, A padlock provided with two bolts, one being employed to hold the hasp while the other fastens the first bolt, all constructed and arranged substantially in the manner and for the purposes set forth.

Second, We claim the use of the notch, b, in combination with the staple, S, and spring, C and D, substantially in the manner and for the purposes set forth.

Third, We also claim the use of the hasp, or its equivalent, for moving the bolt lateraliy into the range of the key, substantially as specified.

48,559.—Apparatus for Separating Grease from Slush.—David H. Kaufman, Kokoma, Ind:

I claim the combined apparatus shown and described, consisting of the upper vat with its adjusting gate, the grated incline and the divided vat, I L, with their communicating opening

I further claim the vat, with its respective chambers, I L, communicating at or near the bottom so as to act as a separator by allowing the lower or watery fluid to pass out of the chamber, which retains the grease.

48,560.—Forging Machine.—John C. Jewell, Boston, Mass.:

I claim, First, The stop, K, when arranged in connection with the hammers, G, to operate in the manner substantially as and for the purpose herein set forth.

Second, The knife or cutter, R, when arranged so as to be operated from the shaft, f, substantially as described.

Third, The ratchet, Y', provided with the beveled projections, n, and used in connection with the pin, o, on the hub, p, of arbor, C, in combination with the sliding bar, Y, provided with the button, u, and fork, X', the pawl, v, the bar, W, connected with shaft, T, and the cam, X, on arbor, C, all arranged substantially as shown, for the purpose specified.

Fourth, The horizontal movable or turning bed, A', with sliding trough, B', attached, operated from the rock shaft, O, through the medium of the obliquely slotted plate, i', rod, D', arranged substantially as and for the purpose set forth.

Fifth, The manner of operating the trough, B', for feeding the rod to the hammers, to wit., by means of the rack, C', attached to the slide, b', the pinion, d, gearing into rack, c', and the ratchet, e', into which a pawl, f', attached to lever, C', catches, the lever, C', being actuated from the rock shaft, O, and all arranged substantially as described.

48,561.—Laundry Water Heater. John Keane, New York City:

I claim, First, In water-hearing apparatus, connecting the branch pipes, E F, which lead to the tub, B, with the pipes, G and L, which convey the water to the fire by means of a horizontal pipe, D, which is divided by a diaphragm, as shown, and in whose ends the pipes, G and L, are capable of turning, substantially as and for the purpose above described.

Second, I also claim the combination with boiler, H, and the circulating pipes, G and L, of a plate, K, whereby the boiler can be used with a cooking stove or range, substantially as above described.

Third, I also claim combining the water-heating apparatus above described with a tub or other vessel, B, for laundry or culinary uses, substantially as above described.

[The object of this machine is to produce a washing machine worthy of a place in the laundry, both on account of the saving of labor and of the preservation of clothes. The box to contain the suds and clothes has an abrading surface on the inside of its front, against which the clothes are brought by a frame, capable of vertical and also of horizontal motion. The inventor has given the title of "Peerless" to his washing machine.]

48,562.—Hand Corn Planter.—Clement H. Kellogg, Elyria, Ohio:

I claim the seed-distributor, A, having apertures, c c c, converging from opposite directions, upward and diagonally to one common point of intersection, and thence upward perpendicularly to the upper surface of the block, in combination with sliding stop, D, and seeding slide, B, the whole being arranged in the manner substantially as described, and for the purpose of inserting the seed in two or more places in the soil.

48,563.—Oscillating Engine.—Wm. H. King, Philadelphia, Pa.:

I claim, First, The arrangement of the channel, S S' and T, through the trunnion, H, substantially in the manner described and shown.

Second, Arranging the steam chest relatively to the trunnion, H, and cylinder, A, substantially as set forth.

Third, The construction and arrangement of the valve gear hereinbefore described, in combination with the steam chest, substantially as herein set forth.

48,564.—Artificial Fuel.—Chas. Korff, New York City:

I claim the production of artificial coal out of mineral coal dust, by combining the same with animal blood and water, substantially in the manner and for the purpose above described.

48,565.—Piano-forte Action.—Frederick Koth, New York City:

I claim the arrangement of the jack, G, lever, H, spring, S, and stop, n, attached to the key, A, in combination with the adjustable stop, N, and operating on the hammer butt in the manner and for the purpose substantially as described.

48,566.—Seeding Machine.—Casper Krogh, Kroghville, Wis.:

I claim the arrangement of the adjustable corrugated apron, H, beneath the hopper of a grain drill, substantially as and for the purposes herein shown and specified.

48,567.—Medicine for the Cure of Erysipelas.—H. A. Lamb, Portland, Me.:

I claim the compound of ingredients mixed in the proportions and for the purpose described

48,568.—Paper File.—Gustave Lautenschlager, New York City:

I claim the application of a series of folding wires, b, to a common rod, A, in combination with a suitable frame, B, constructed and operating substantially as and for the purpose set forth.

[This invention consists in the application to a central stem or axis of a series of looped wires, in combination with a folding frame, in such a manner that each wire is capable of receiving and holding its own paper, and all the wires swivel on the central stem, so that they fold one over the other, and when the frame is closed the papers are situated one above the other in a convenient position for the reader. Each paper can be conveniently removed without disturbing the others; and, furthermore, the papers are not injured or torn by passing needles through them, or by points or other devices generally employed in paper files of the ordinary construction.]

48,569.—Buckle.—B. S. Lawson, New York City:

First, In buckles for fastening skates, and for other uses, placing the journals of the tongue in openings in the frame of the buckle, of such form as that said journals can be shifted from their bearings, substantially as describe.

Second I also claim so constructing a buckle as that its tongue can be loosened from the strap by lifting the hinder end of the buckle, substantially as described.

48,570.—Fruit Dryer.—David Lippy, Mansfield, Ohio:

First, I claim a series of drawers, F, provided with slatted bottoms, c, and dampers, C, and arranged with dampers, H, at their sides, substantially as and for the purpose specified.

Second, The furnace, B, having two plates, C D, above it, one of which, D, is provided with a register, E, all being arranged in connection with the drawers and dampers, to operate as and for the purpose set forth.

Third, The ventilators I, applied to the building, A, and used in connection with the furnace drawers and dampers, substantially as and for the purpose set forth.

Fourth, The combination of the furnace drawers, dampers and ventilators, all arranged within a building, to operate in the manner substantially as and for the purpose described.

[This invention relates to a new and improved device for drying fruit, and it consists in a novel arrangement of a furnace, damper and drawers, whereby fruit may be dried expeditiously and with but a small expenditure of fuel.]

48,571.—Flour Sifter.—Harvey Locke, Boston, Mass.:

I claim my improved sifting apparatus, having its wings or scrapers, G G, constructed and applied to the arms, b b b b, and so as to operate with the seive, in the manner as set forth.

48,572.—Flour Sifter.—S. C. Maine, Boston, Mass.:

I claim a sifter cylinder, composed of independent sections or parts, placed one within the other, and operating substantially as and for the purpose set forth.

I also claim, in combination with the above, the cover, E, operating substantially as set forth and for the purpose described.

48,573.—Grain Dryer.—Sylvester Marsh, Chicago, Ill.:

I claim the general construction and arrangement of the grain-drying apparatus, substantially as herein described; that is to say, forming the grain receivers or chambers of a cylindrico-conical form, in combination with central induct and eduction pipes, arranged circumferentially in the manner and for the purpose set forth.

Second, In combination with cylindro-conical grain receivers or chambers, I claim forming the underside of covering plates to equally distribute the grain and insure its uniform discharge through the pipes.

Third, I claim the arrangement of the central column or radiator or smoke-stack, in combination with concentric drying chambers and inclosures, substantially in the manner and for the purpose set forth.

Fourth, I claim the combination of the discharge pipes or openings, with hinged valve traps, arranged for operation in the manner and for the purpose set forth.

Fifth. I claim the method herein described of regulating the temperature of the ascending currents by means of a blast of air down upon the furnace, substantially in the manner and for the purpose set forth.

48,574.—Endless Chain Propeller.—Angus McDonald, Mattawan, Mich.:

First, I claim as an improvement in propellers the combination of the twisted wire links, D E, buckets, F, and thimbles, G, as and for the purposes specified.

Second, The connecting of the links, D E, of said chains together, by means of the eyes, c, protected by metal strips, d, and the metal bars, composed of the parts, f g, as set forth.

Third, The arms, B, provided with chairs, H, at their ends, having projections, h, in connection with the thimble, G, in the links, E, of the chains, substantially as and for the purpose specified

[This invention consists in the employment or use of endless chains of buckets, peculiarly constructed, and arranged to work over the ends of arms attached readily to rotating shafts, whereby a very durable propeller is obtained, especially for boats of light draught.]

48,575.—Cultivator.—H. S. Mead, Gloversvile, N. Y.:

I claim the oblique rotating toothed shaft, F, fitted at the lower ends of pendants attached to the frame, A, of the machine, and arranged to operate in the manner substantially as and for the purpose herein set forth.

[This invention relates to a new and useful machine for cultivating and hoeing the soil, and it consists in the employment or use of two shafts placed in an oblique position relatively with each other, provided with teeth, and operated from the shaft or axle of the wheels on which the machine is mounted, whereby the earth may be cast either toward or from the plants, weeds thereby eradicated, and the soil pulverized and lightened up to promote the growth of the plants.]

48,576.—Washing Machine.—S. P. Mecay, Kilborn, Ohio:

I claim the spring, H, connected to the slides, G in which the ends of the shaft, F, are fitted in combination with the link, E, and the arm, D, of the head, C, all being arranged substantially as shown, with a lever, J, or its equivalent, for operating the head, for the purpose set forth.

48,577.—Rotary Engine.—Truman Merrian and James Cushing, Waterlo Village, Wis.:

First. We claim the arrangement of the cylinders and pistons upon a revolving drum on a shaft, in combination with a face-plate and ports, and adapted to circular apertures in a stationary steam chest, so that a constant pressure of action steam may be alternately applied to the piston, thereby increasing the leverage and speed, as herein set forth and described.

Second, We claim the two semicircles, in combination with friction trucks on a cross-head, by which, in connection with the movement of a common piston, rotary motion and power are obtained, as herein set forth and described.

Third, We claim the steam chest, with an oscillating joint, in such a peculiar arrangement and adaption to a face plate as will admit steam to cylinders and permit the chest to revolve one quarter, and thereby reverse the motion of the engine, as herein set forth and described.

48,578.—Apparatus for Lining Hides.—Saml. J. Miller, Albert B. Barnett and Wm. H. Study, Economy, Ind.:

First, We claim the employment of rotating hide racks in the process of lining hides, substantially as described.

Second, Applying hide racks to a shaft in such manner that they can be adjusted and set at different distances apart to adopt them to hide of varying sizes, substantially as described.

Third, The use of rotating hide racks, in conjunction with a supporting frame, which is susceptible of being elevated or depressed, substantially as described.

Fourth. A lining vat, which is constructed with a concave bottom and provided with hide racks, substantially as described.

48,579.—Hoisting Machine.—William Miller, Cincinnati, Ohio:

I claim, First, An elevator platform having a single worm wheel, F, which washes within two or more opposite worm rocks, B B, substantially as set forth.

Second, An elevator platform supported by rollers, G, or their equivalents, on a single worm wheel, F, resting in worm rocks, B B, substantially as set forth.

48,580.—Process for Making Sugar.—Thomas Moore, Bloomington, Ill.:

I claim the within described process of treating sacharine juices and sirups of the sorgho and imphe canes, by first treating the juice with a tannate made of white oak bark, or other equivalent, while cold, and raising it to a certain point by a gradual heat, for the purpose of rendering insoluble, in order to remove certain gluticnous or starchy matters contained therein, then mixing with it a weak ley for further defecation, then boiling to the point of crystalization, substantially in the manner set forth.

I also claim distinctly the use of a liquor made of oak bark, or other equivalent material, in connection with a ley of wood ashes, or other equivalent, as an effectual agent for the defecation of sorgho and imphe juices and sirups, substantially as and for the purposes specified.

[The object of this invention is to remove from the juice of sugar cane or other saccharine liquid all the acid parts which may be mixed with it, before and during the process of boiling, and also to facilitate the crystalization of the sugar after the juice has been boiled down to the requisite consistency.]

48,581.—Excavator.—Jason C. Osgood, Troy, N. Y.:

I claim the combination of the toothed chain friction wheel, C, with the friction wheel, F, the belt chain, and toothed wheel, B, and toothed shire wheel, A, for the purposes as herein set forth.

48,582.—Dust Pan and Brush.—Charles H. Parker and Grindly Burnham, Waltham, Mass.:

I claim a dust pan and brush combined, substantially in the manner herein shown and described.

[This invention consists in the combination of a dust pan and dust brush, the latter being inserted in the handle of the former, which is made hollow and sufficiently large to receive the same within it, and from which the brush can be withdrawn at any moment for use The advantage of having these articles combined is apparent. They are necessarily such articles as belong together, and by having them combined in this way much trouble and vexation in looking for one which has been mislaid to use with the other will be avoided.

48,583.—Paint for Ships' Bottoms.—David Parkhurst, Gloucester, Mass.:

I claim the compositions prepared substantially as hereinbefore forth and for the purpose specified.

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48,584.—Heating Oil Wells by Electricity.—George T. Parry and William S. Warner, Philadelphia, Pa.;

First, We claim employing the heating power of electricity for the purpose of liquifying and accelerating the flow of oil from oil wells, substantially as described.

Second, Inclosing the circuit interrupter or electrical heater within a tight chamber, substantially as herein described.

48,585.—Oil Can.—John M. Perkins and Mark W. House, Cleveland, Ohio:

We claim forming passages with corrugated metal plate or plates, substantially as described and for the purpose set forth.

48.586.—Head Rest for Railroad Car Seats.—William R. Phelps, New York City:

I claim the improved head rest herein described, to be attached to car seats, etc., the same consisting of a movable and adjustable head rest frame, in combination with a frame susceptible of being attached to or removed from the seat at pleasure, arranged and operating together, substantially as specified.

48,587.—Broom or Brush Head.—John Edward Phillips, Philadelphia, Pa.:

I claim the metal frame, A, as shown in Fig. 2, whether molded and cast in one piece of metal, or stamped and pressed in one piece of sheet metal having bars, on two or more of which the loops, c c, are formed to receive the handle, and thereby clamp the filling, as and for the purposes described.

Also the spring metal confiner, D, or its equivalent, made as described, and to be placed on the filling below the frame, as and for the purpose described.

[This invention consists in a novel construction of brooms, brushes and like articles, which are made by aggregating and confining numerous strands of fibrous or other suitable material, so as to make a mass or body whose unconfined ends make the wearing surface of the article.]

48,588.—Beer Faucet.—Louis Poh, Buffalo, N. Y.:

I claim the combination of the key, C, plunger, C', plunger barrel, E, and discharge nozzle, B, when arranged and operating in the manner and for the purposes described.

48,589.—Machine for Printing Checks.—Joseph Pollak; Chicago, Ill.:

I claim the device for printing numbers on checks, as herein described, which can be constructed so that it may be attached to scales, or otherwise, where such printing is required.

48,590.—Seeding Machine and Cultivator Combined.—O. M. Pond, Independence, Iowa:

I claim, First, The arrangement of described devices for jointing the tongue and reach together, and securing said joint in place as may be required in raising and lowering said tongue and reach, in combination with the cultivator apparatus, in the manner and for the purposes set forth.

Second, I claim ninging the beams of the cultivator teeth to the rod. J, as described, in combination with the bar, K, when the said bar is attached as set forth, and operating as and for the purpose herein specified.

48,591.—Machine for Scraping Roads and Clearing Gutters.—Nathaniel Potter, East Hamburg, N. Y.:

I claim the manner of constructing the scrapers, as described, so that they may be used either for clearing gutters at the sides of roads, or for smoothing roads and filling ruts; this I claim in combination with the cutters attached to the center piece, and other portions of the machine necessary for the purpose specified.

48,592.—Hood for Cook Stoves.—Fitch Raymond and August Miller, Cleveland, Ohio:

We claim, First, Hinging the sections, A and B, together in the manner described, when used in their relation to the stove, E, stove pipe, C, tubes, d d', and valve, e, as and for the purpose set forth.

Second, We claim the adjustable cap, A, troughs, D, and rods, H, in combination with the valve, e, and opening, d, as and for the purpose set forth.

48,593.—Fan Blower.—Charles G. Sargent, Graniteville, Mass.:

I claim, in combination with a fan case substantially such as described, a series of fan wings or blades, inclining outward and backward, and revolving in said case, in the manner and for the purpose substantially as described.

I also claim, in combination with the inclined wings or blades of a revolving fan substantially such as herein described, the stationary inclined arms or vanes in the fan case, for the purpose substantially as described.

48,594.—Bolt Cutter.—Erhard Schlenker, Buffalo, N. Y.:

I claim a bolt cutter, with the die carrying disk, D, and handle, C, attached, when all are combined, arranged and operated as and for the purposes specified.

48,595.—Basket.—Theron Sherry, Newark, N. J.:

I claim folding baskets constructed in the manner and for the purpose herein set forth.

48,596.—Washing Machine.—Hamilton E. Smith, Cincinnati, Ohio:

I claim, First, The combined cover and washboard, G, constructed and applied as herein specified.

Second, The combination of the heads, B B, slots, C, ribs, D, rods, E, and water passages, b c c', arranged and operating as set forth.

48,597.—Straw Cutter.—Basil Spencer, Lewisburg, Pa.;

I claim the arrangement and combination of the bars, F, with their pitman, K, crank shafts, I and J, as connected with the rake head, L, and feeding rollers, M, and arm, V, and operating lever, W, when arranged and combined as herein described and for the purposes set forth.

48,598.—Sausage Filler.—O. W. Stowe, Plantsville, Conn.:

I claim the case, A, composed of a section of a hollow sphere, a, or of the suitable form and a cone, b, in connection with a slotted disk, D, placed obliquely on the shaft, B, and a piston, C, all arranged to operate in the manner substantially as and for the purpose herein set forth.

[This invention consists in the employment or use of a case constructed or cast in the form of a portion of a sphere and a cone and furnished with a rotary piston and a rotary slotted disk in or through which the piston works the disk rotating in an oblique plane in the hopper whereby a very compact and efficient implement is obtained for filling sausages, and for other purposes.]

48,599.—Packing for Artesian Wells.—Samuel Swartz, Buffalo, N. Y.,

First, I claim the spring packing and wedges when constructed and arranged substantially as herein set forth.

Second, I claim the wedges in combination with the spiral springs and lower ring for the purpose set forth.

Third, I claim the chain or its equivalent connected with the rod and pulley as arranged with an adjustable packing, substantially as shown and described.

48,600.—Horse Power.—J. B. Sweetland, Pontiac, Mich.:

I claim the arrangement of the triangular frame, A, the metallic bed plate, E and F, the master wheel, C, and the shaft, D, the several parts being constructed and used together as and for the purpose herein specified.

48,601.—Skates.—Owen W. Taft, New York City:

First, I claim the application to a skate of a heating attachment substantially such as herein described or any equivalent thereof for the purposes set forth.

Second, Making the foot plate detachable, substantially as and for the purpose specified.

Third, The hook catches, d, and forked stud, f, in combination with the foot plate, C, heater, E, speds, e, and spring, g, constructed and operating substantially as and for the purpose set forth.

48,602.—Device for Fastening Lock Key.—James R. Tempest, Philadelphia, Pa.:

I claim the disk, c, in combination with the ratchet teeth, c2, on the key, c, and the spring pawl, D, on the face of the lock case, A B, the said parts being constructed and arranged to operate together substantially as and for the purpose described.

48,603.—Grain Separator.—Julius Tomlinson, Newburgh, Wis.:

First, I claim securing the pendants, C C, and standards, D D, of the screen frame, B, to the framing, A, by means of screws, a, passing through oblong vertical slots, b, in the pendants and standards, and into the framing to admit of the varying of the inclination of the screen frame, substantially as shown and described.

Second, The screens, E, formed with beveled lower edges provided with a flange or lip, d, and with spouts, E, and arranged or disposed within the frame, B, and with a blast spout, G, to operate in the manner substantially as and for the purpose set forth.

Third, The inclined feed spout, N, provided with a bottom, j, having perforations of different sizes, substantially as and for the purpose set forth.

Fourth, The introduction of a lever either straight or bent between the eccentric and the sieve frame, the straight lever to have a movable fulcrum and the bent lever to be operated by a movable eccentric, substantially as and for the purpose set forth.

48,604.—Rotary Pump.—Philip Umholtz, Tremont, Pa.:

I claim the combination of the casing, A, and its plate, B, and pin, K, with the rotary cylinder, C, vibrating valve, G G', spring, L, and stopper, J, substantially as described and represented.

48,605.—Drilling Artesian Wells.—Salmon J. Wadsworth, Buffalo, N. Y.:

I claim the swivel, C, with its rod, c, in combination with the wheel, A, cam, B, and rope, x, in the manner and for the purpose described.

48,606.—Grain Rake.—Eli G. Warner, Union Township, Ohio:

I claim the construction of the rake with feet, and long teeth braced to the handle in such a manner as to form a platform on which the grain will lay, raised out of the stubble ready for the hands of the binder as above described.

48,607.—Thermal Motor.—George I. Washburn, Worcester, Mass.:

I claim, First, Utilizing the expansive and contractile force derived from variations of temperature in tubes or bars of metal so as to produce a regularly recurrent or continuous motion, the said force being applied through the intervention of a mainspring or resulting from the regularly recurrent artificial application of heat to said bar or tube.

Second, Utilizing the expansive force resulting from the increase of temperature of a confined body of air, to compress a spring from which a regularly recurring or continuous motion is obtained.

Third, Utilizing the expansive force resulting from the artificially produced increase of temperature of a confined body of air which is subjected to the variations of temperature without the accession of fresh air, excepting sufficient to supply the waste.

Fourth, I claim the double fork-shaped bars, M M' K, or their equivalent embracing a central bar, N', of a different exhaustive power to which they are mutually attached at or near their extremities, by which the expansive power of a single rod may be almost doubled within a given length and by which according to the relative expansibility of the tongs and the embraced portion it may be made to contract or expand longitudinally by increase of temperature.

Fifth, I claim the levers, B B', multiplying wheels or pulleys, A a A a', etc., and expansible rod, D, the whole being arranged to operate in the manner and for the purpose herein set forth.

Sixth, I claim a series of multiplying levers, G I, operating in connection with the levers, B B, and expansible rods, E E', in any manner substantially as described.

Seventh, I claim the connecting wires or cords, C C, etc., H J, formed of metal or other material and employed in combination with the multiplying wheels and levers, substantially as and for the purposes explained.

48,608.—Wire Straightening Machine.—George I. Washburn, Worcester, Mass.:

I claim causing the wire to rotate upon its own axis as it passes between the straightening points, in any manner, substantially as set forth.

Second, As an improvement in machines for straightening wire, I claim the combination of the reel, C, yoke, D, and wheels L L' L2 L3, arranged and operating substantially as and for the purposes set forth.

48,609.—Drill.—R. G. Wells, Plummer, Pa.:

I claim forming the drill with the diagonal edge, b, and diagonally opposite straight corners, a a, and alternate beveled corners, c c, substantially as and for the purposes herein specified.

48,610.—Buckle.—Peregrine White, Dixmont Center, Me.:

I claim the improved buckle consisting of the eccentric roller, C, one or more spurs, b, a frame or loop, A, and a cross bar, B, arranged and combined substantially in manner and so as to operate as specified.

48,611.—Slide Valve.—James A. Woodbury, Boston, Mass.:

I claim, First, Constructing the valves, D D, independently of each other and with a space between them so that they may be free to expand or contract between the vertical parallel port walls, C C, substantially as and for the purpose described.

Second, Connecting the valves, D D, by means of the bar, G, or its equivalent, substantially as and for the purpose described.

48,612.—Self Centering Chuck or Holder.—Thomas H, Worrall, Lawrence, Mass.:

I claim the projections, d', or their equivalents extending from the ends of the jaws, c, and operating in combination with cross pieces, f, or their equivalents and with the cap, C, substantially as and for the purpose herein set forth.

Second, The adjustable tips, g, in combination with the jaws, c, cap, C, and mandrel, A, constructed and operating substantially as and for the purpose described.

Third, The defferential screws, d e, applied in combination with the thimble, D, cap, C, jaws, c, and mandrel, A, substantially as and for the purposes specified.

[In this chuck or holder the jaws are provided with projections extending through slots in the longitudinally sliding cap and provided with rigid or adjustable tips or screws in such a manner that the jaws are compelled to move in and out with the cap and a positive motion is imparted to said jaws in either direction. If adjustable tips are applied to the jaws, the chuck can be used for holding articles of a large or small diameter eccentrically or concentrically with the spindle to which the chuck or holder may be attached. The longitudinal motion of the cap may be produced by the screws of different pitch whereby the power with which the jaws are caused to gripe the articles to be held between them, can be increased to any desired extent.]

48,613.—Water Wheel.—Gilman F. Wright, Graniteville, Mass.:

I claim, in combination with a scroll water way, D, the ring gate or curb, C, the stationary guide, B', and the wheel, B, the whole being constructed, arranged and operated in the manner and for the purpose substantially as herein described and represented.

48,614.—Boot and Shoe.—F. D. Ballou, Abington, Mass., assignor to Alfred B. Ely, Boston, Mass.:

I claim the new article of manufacture, constituting a boot or shoe, substantially in the manner described.

48,615.—Mode of Extracting Drills from Wells.—Jacob Beyer (assignor to himself and John E. Smith), Buffalo, N. Y.:

I claim, First, Operating the griping tongs, A A, by the reversing or secondary levers, C C, and rope, D, in the manner and for the purposes described.

Second, The combination of the upper ring, E, and operating cord, F, with the tapering griping tongs, for the purposes and substantially as described.

Third, The combination of the lower ring, E', with the tapering griping tongs and stop bar, G, operating as and for the purposes described.

48,616.—Cultivator and Potato-digger Combined.—Moses and John W. Chandler, East Corinth, Maine, assignor to themselves and Anthony and Wilson R. Woodard, Bangor, Maine:

First, We claim the oblique blades or cultivators, E E, in combination with the shares, G G, and screens, F F, all arranged to operate substantially as and for the purposes set forth.

Second, We also claim the shares, G G, and screens, F F, arranged with a space, k, between them, to admit of the passage or escape of obstructions from the shares and screens, as set forth.

48,617.—Car Coupling.—Wm. C. Clark, Portland, Maine, assignor to himself, W. D. Richards, Lynn, Mass., and Wm. H. Skinner, Lexington, Mass.:

I claim the combination of the arm, d, and its socket, h, with the link pin, C, and the bunter, bar, the whole being arranged and so as to operate substantially as specified.

I also claim the above-described arrangement or application of the spring latch with the socket, h; that is, so as to operate with the head of the arm, d, in manner and under circumstances substantially as specified.

48,618.—Horse-shoe.—George Custer (assignor to himself, Charles Toll and John Paxton), Monroe, Mich.:

I claim corrugating or otherwise roughening the countersink or crease at and around the nail hole, so that when the head of the nail is driven against them there shall be a more perfect contact of metal between them, substantially as and for the purpose described.

I also claim forming a shoulder between the inclined sides of the countersink or crease in a horse-shoe and the nail-hole, as and for the purpose substantially as described.

48,619.—Beater Press.—P. K. Dederick (assignor to L. and P. K. Dederick), Albany, N. Y.:

I claim, First, The employment and use in a beater press of toggle levers with the lower ends of the fulcrum levers permanently located on a plane even with or above the top of the bale, when said levers are connected by the rod, H H, and bars, I I, the whole being so constructed as not to interfere with the relieving of the bale endwise when pressed.

Second, The frames, O, forming a direct and substantial connection between the fulcrum bars, b', and the beater as head block, and the suspended plates, N, attached to the frame, O, in the manner and for the purpose described.

Third, The fastenings for the doors, composed of the rollers, S, connected to the frame of the press by means of links, V, and provided with the eccentrics, T T, and handles, U, substantially as set forth.

Fourth, The relieving plates, X X, arranged with the bars, Z, shafts, Z', having eccentrics, A', on them, and connected with the follower bars, G, to operate in the manner substantially as and for the purpose set forth.

Fifth, The follower, suspended by the bars, G G, to the upper ends of the toggle levers, J J, in combination with the beater, C, used as a fixed head while the bale is being pressed.

[This invention relates to a new and improved beater press, and it consists in a novel and improved construction and arrangement of the parts, whereby it is believed that the operations of beating an compressing substances for baling may be performed with greater facility than usual. It refers to a press of that class in which levers are employed for operating the follower.]

48,620.—Hydrometer.—William Edson (assignor to Shedd & Edson), Boston, Mass.:

I claim, First, The combination of indices in such a manner that when one is placed at the hight of the mercury in a dry-bulb thermometer, and another at the hight of the mercury in a wet-bulb thermometer, a third point will indicate on a scale the proportion of moisture in the atmosphere, substantially as and for the purpose set forth.

Second, A diagram of lines, so combined with a scale of figures, and so constructed or drawn as to indicate the relative humidity of the air, the dew point, and the absolute amount of moisture, either or all, when pointed out by an index whose position is regulated by adjustment to the hight of the mercury in wet and dry-bulb thermometers, substantially as and for the purpose set forth.

48,621.—Beating Device for Baling Press.—Loyal C. Field (assignor to himself, Joseph P. Frost and W. S. Bellows), Galesburg, Ill.:

I claim closing the doors automatically just previous to the liberation and fall of the beater, and opening them after its fall by means of the horse power, by mechanism substantially as herein described and for the purposes specified.

I also claim the connecting of the doors, J J, to pulleys, M, on a shaft, N, by means of chains, ropes or cards, L, the lever, P, connected to a pulley, O, on shaft, N, by a chain, cord or strap, Q, when said parts are used in connection with a rising and falling beater, B, and a horse power or other motor, all arranged to operate substantially as and for the purpose set forth.

48,622.—Magazine Fire-arm.—Joshua Gray, Medford, Mass., assignor to himself and E. H. Eldridge, Boston, Mass., W. G. Langdon, Malden, Mass., and S. S. Bucklin, Providence, R. I.:

I claim, First, So shaping the opening, L, in the magazine that it will be impossible to insert a carriage wrong end front, substantially as described.

Second, The slot or stop, j, and a pin or stop, i, or their equivalents, to prevent the inner tube, D, from ever coming out of the magazine, C, substantially as described.

48,623.—Horse-shoe.—J. Wilson Hodges (assignor to himself and P. DeMurguionds), Baltimore, Md.:

I claim the attachable and removable roughing bar, C, provided with calks, and secured in the groove of the shoe by means substantially as described.

I claim, Second, The blank bar, E, adapted to occupy the groove, B, in the absence of the roughing bar, and secured in a similar manner within the groove.

48,624.—Hand Stamp.—Horace Holt, Brooklyn, N. Y., assignor to Wm. W. Secombe, New York City:

I claim, First, The type-carrying head, F, constructed with cavities, d d, for the reception of the ink ribbon, and attached to its stem, D, by a circular groove, and set screw or equivalent device, to admit of turning it on its axis, all substantially as herein shown and described, and for the purposes specified.

Second, The nick, j, segmental slot, j, and spring, k, in the type plate, G, to operate in combination with the screws or studs, i i, in the head, F, substantially as and for the purpose set forth.

48,625.—Process for Lining Oil Barrels.—Charles B. Hutchinson (assignor to himself and J. H. Woodruff, Auburn, N. Y.:

I claim the within described process for applying solutions to the interior of casks, barrels, etc., to render them tight, so as to avoid the loss of their contents by leakage and evaporation, to wit, by heating and drying the interior of the cask or barrel, and opening the pores of the wood, by hot air, forced into the same through the medium of a pump, or its equivalent, and then applying the solution to the interior warm surface of the cask or barrel, and forcing it into the open pores, cracks and crevices by hot air under pressure, substantially as set forth.

48,626.—Curling Iron.—H. D. Jennings, Ilion, N. Y., assignor to Bernard Lavery, Waterford, N. Y.:

I claim a curling iron constructed and made in two parts, consisting of a shell and core, each having a separate handle, substantially as and for the purpose herein described.

48,627.—Cultivator.—John Lacey (assignor to Conrad Furst and David Bradley, Chicago, Ill.:

I claim, First, Connecting the movable parts of a mounted cultivator with the wheels and axle by the horizontal swinging bars or rods, I, substantially as shown and described.

Second, Pivoting the seat lever, K, to the axle by means of the post, M, or its equivalent, and to the movable parts of a cultivator, so as to adjust the weight of such movable parts, and cause the reaction of the force applied to move them to operate in the same direction as the direct force, all being substantially arranged and constructed as and for the purposes set forth and specified.

48,628.—Evaporator.—F. M. Love (assignor to himself and Samuel C. Love), Waldron, Ind.:

I claim the combination of the furnace, A, with the valves, c c c c and c, the graduations with plates, B B B B and f, the boxes, C C1 C2 C3 and D, the partitions, d d d, and doors, k, and the pipes, O O O O, all or as many of each of the above mentioned boxes, plates, valves, cranks or pipes and graduations as may be desired, arranged and operating substantially as and for the purpose shown and described.

48,629.—Horse Rake.—Robert J. Robeson (assignor to himself and Jared W. Mills), Chicago, Ill.:

I claim, First, The employment of the hinged or adjustable fulcrum, F, provided with the slot, f, arranged and operating substantially as and for the purposes herein specified and shown.

Second, I claim the combination of the lever, E, provided with

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the rod or rest, e, and the hinged arm or fulcrum, F, provided with the slot, f, as and for the purposes specified.

Third, I claim the combination of the rake, D, the levers, E, and arms, M, the lever, l n, and hinged fulcrum, F, all arranged and operating substantially as and for the purpose specified and shown.

48,630.—Hinge.—Nathaniel Sehner (assignor to himself and Abraham Huffer), Hagerstown, Md.:

I claim fastening or locking a hinge or butt by means of a spring or springs and an eccentric, constructed and operated substantially in the manner and for the purpose set forth.

48,631.—Pantry.—Job Shattuck, Brookline, N. H., assignor to himself and John S. Proctor, Mason, N. H.:

I claim a movable pantry constructed substantially as and for the purpose above described and stated.

48,632.—Lamp Shade.—Cornelius St. John, Boston, Mass., assignor to O. M. Southwick, Woonsocket, R. I.:

I claim as my invention the combination of the pyramidal lamp shade, A, and the series of reflectors, C C and c, arranged and applied to it, substantially as and so as to operate as specified.

I also claim the pyramidal shade, as made with the heat-resisting and reflecting lining and the adjustable reflectors, arranged substantially as specified.

48,633.—Die for Making Augurs.—Edward H. Tracy (assignor to The Eagle Augur and Skate-manufacturing Company), Meriden, Conn.:

I claim the construction of the respective parts of the die which perform the operation set forth, substantially in the manner described.

48,634.—Substitute for Rosin.—Daniel T. Wilson, Harrisburg, Pa., assignor to himself and Reuben Hoffheins, Dover, Pa.:

I claim the use of coal tar, prepared substantially as described, as a substitute for rosin, for the purposes set forth.

48,635.—Lamp.—Charles Boschan, Josef Bindtner and William Caffon, Vienna, Austria:

We claim, First, Making the exterior of the lamps in sections, M M, so that they may be taken apart for the purpose of removing or replacing the oil cup or reservoir, which is separate from the said exterior of the lamp, substantially as described.

We also claim, in combination with the sectional exterior of the lamp, M M, and a removable and replacable cup or oil reservoir, the placing of the wick tube and cap or burner on the external section, and attaching the oil cup, with the wick tube projecting therein, by a screw from the under and inner side thereof to the said outer and upper section, substantially as described.

48,636.—Preserving Wood from Decay, Etc.—Alexander Hamar, Hungary, Austria, assignor to John C. Fremont, New York City:

I claim preserving wood from decay, insects and other destructive agents by means of a solution prepared substantially as herein described, and applied in the manner herein set forth.

48,223 (dated June 13, 1865, previously omitted).—Flour Sifter.—Howard Tilden, Boston, Mass.:

I claim as my improvement in sifters for flour, sauce, etc., the rollers, or their equivalents, for mashing the lumps, in combination with the scrapers, substantially as described.

REISSUES.

2,018.—Loom.—Christopher Duckworth, Mount Carmel, Conn. Patented June 28, 1853:

First, I claim a power loom, which is provided with many-celled shuttle boxes, the movements of which are automatically controlled in such manner that the cells of the boxes can be skipped over any desired shuttle thrown from any box in the combination, according to the character or figure to be woven, substantially as described.

Second, Providing for operating many-celled shuttle boxes, so as to bring any desired shuttle into action, by means of palls, ratchets, and reversible tappets, in combination with pattern surfaces, which will control the figure to be woven, substantially as described.

Third, The use of toppets, which receive both a rotary and an oscillatory motion from a pattern or patterns, in combination with many-chambered shuttle boxes, substantially as described.

2,019.—Loom.—Christopher Duckworth, Mount Carmel, Conn. Patented June 28, 1853:

First, Giving an alternate movement to shuttle boxes in a vertical plane, by means of palls, reversible tappets, and a contrivance which will automatically control the movements of said palls, substantially as described.

Second, Giving an alternate movement to shuttle boxes in a horizontal plane, by means of palls, reversible tappets, and a contrivance which will automatically control the movements of said palls, substantially as described.

Third, Giving an alternate diagonal movement to shuttle boxes by means of palls, reversible tappets, and a contrivance which will automatically control the movements of said palls, substantially as described.

Fourth, The combination of reversible tappets, with shuttle boxes, which are so applied to the loom that they will admit of being moved either laterally, vertically or diagonally, substantially as described.

Fifth, Giving an intermittent, oscillating or rotary movement to a shuttle-box actuator, by means of palls and ratchet wheels, which are controlled by a cam surface, t, or its equivalent, substantially as described.

Sixth, The use of tappets, which receive a forward and backward movement, or a continuous rotary movement, in combination with many-chambered shuttle boxes at both ends of the lathe, which boxes are connected together by a lever, G, and operated simultaneously by means of said tappets, substantially as described.

Seventh, Giving a reciprocating movement to many-chambered shuttle boxes of looms, by means of contrivances which are controlled automatically in such manner that the boxes are moved a greater or less distance by a single vibration of the lathe, so as to throw the shuttle in regular order or to skip a shuttle, according to the figure which it is desired to weave, substantially as described.

2,020.—Self-acting Pulley Brake.—John Jochum, Brooklyn, N. Y. Patented Nov. 29, 1864:

I claim a tackle block containing one or more sheaves, and provided with one or more spherical wedges, E, and spring, F, constructed and operating substantially as and for the purposes set forth.

2,021.—Furnace for Decomposing and Desulphurizing Ores.—Robert Spencer, New York City. Patented Nov. 8, 1864:

First, I claim in a kiln or furnace for reducing quartz rock by heating and plunging the rock into a liquid bath, an arrangement by which the rock when highly heated may be precipitated at once from the furnace directly into the bath, substantially as described.

Second, In a kiln or furnace for reducing the ores of the precious metal, I claim the use of a hood and usual appurtenances for the condensation and preservation of sulphur or of the fine particles of the precious metals, substantially as hereinbefore described.

2,022.—Method of Decomposing and Desulphurizing Ores.—Robert Spencer, New York City. Patented Nov. 8, 1864:

First, The above-described process of removing sulphur from quartz rock, and rendering such rock pulverulent by long-continued and high heat, and subsequent sudden precipitation into a liquid bath.

Second, I also claim reducing the ores of the precious metals when imbedded in rock, in combination with sulphur, without the necessity of previously breaking the rock into nodules by heating and quenching, substantially as above described.

Third, I also claim the effectual separation of the precious metals from quartz rock and sulphur, without the necessity of a second heating of the granulated quartz, by heating and quenching, substantially as described above.

Fourth, I also claim the use of a bath for quenching the heated rock, consisting of water impregnated with ingredients that act chemically upon the rock, for the purpose of softening it and preparing it for the action of the grinding apparatus.

2,023.—Coal Stove.—Philo P. Stewart, Troy, N. Y. Patented April 28, 1863:

First, I claim the combination of the cylinder or box, c, with the surrounding air-distributing chamber, S, and with the fire-brick, d, containing apertures, all constructed and arranged in the manner substantially as and for the purposes herein described and set forth.

Second, I also claim the perforated plate, m, and cold air chamber, K, in combination with the said door, w, having therein the wire gage or its equivalent, and with the surrounding air-distributing chamber, S, in the manner and for the purposes herein described and set forth.

Third, I also claim the perforated plate, m, and cold air chamber, K, or its equivalent, in combination with the door, w, having therein the cold air chamber, Z, constructed, arranged and combined in the manner and for the purposes substantially as herein described and set forth.

Fourth, I also claim the employment of the air distributing chamber, S, opening at its lower end into the ash drawer or chamber, g, and immediately between the fire brick or inner linings, d, of the fire chamber and the outer casing or box, c, surrounding the said air chamber, and having lugs or iron pins cast thereon, and each arranged and combined in the manner substantially as herein described and set forth.

2,024.—Machine for Incising Button Holes and Embossing and Printing Articles of Wearing Apparel.—Samuel S. Stone, Troy, N. Y. Patented Aug. 23, 1864:

First, I claim two oblong male button-hole punches and two corresponding female punch-receiving dies, combined and arranged and made adjustable so as to punch two oblong button holes endwise, or nearly so, to each other at one operation and at various distances apart, substantially as herein set forth.

Second, I also claim two oblong male button-hole punches and two corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch two oblong button holes apart from each other at one operation and in various directions, substantially as herein set forth.

Third, I also claim two oblong male button-hole punches and two corresponding punch-receiving dies, combined and made adjustable so as to punch two oblong button holes at one operation, and in various directions and at different distances apart, substantially as herein set forth.

Fourth, I also claim two oblong male button-hole punches and two corresponding receiving dies, combined and arranged and made adjustable so as to punch two oblong button holes crosswise, or nearly so, to each other, at one operation, and at various distances apart, substantially as herein set forth.

Fifth, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged so as to punch two oblong button holes apart from and endwise, or nearly so, to each other, and another oblong button hole midway, or nearly so, between and crosswise, or nearly so, to the said end button holes, all at one operation, substantially as herein set forth.

Sixth, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes at various distances apart, substantially as herein set forth.

Seventh, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes apart from each other, at one operation, and the end button holes in various directions, substantially as herein set forth.

Eighth, I also claim three oblong button hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes at one operation, and the end button holes in various directions and at different distances apart, substantially as herein set forth.

Ninth, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes apart from each other at one operation, and the central button hole at various distances from a line joining the two end ones, substantially as herein set forth.

Tenth, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes at one operation, and the central button hole at different distances from a line joining the two end ones, and the two end button holes at various distances apart, substantially as herein set forth.

Eleventh, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes apart from each other at one operation, and the end button holes in various directions, and the central button holes at different distances from a line joining the two end ones, substantially as herein described.

Twelfth, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes at one operation, and the end button holes in various directions and at different distances apart, and the central button hole at various distances from a line joining the two end ones, substantially as herein set forth.

Thirteenth, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes apart from each other at one operation, and the central oblong button hole in different directions, in respect to a line joining the two end button holes, substantially as herein described.

Fourteenth, I also claim three oblong male button-hole punches and three corresponding punch-receiving dies, combined and arranged and made adjustable so as to punch a central and two end oblong button holes apart from each other at one operation, and the central button hole in different directions in respect to and at various distances from a line joining the two end button holes, substantially as herein described.

Fifteenth, I also claim an imitation stitching stamp, E, with an impression bed, F, therefor, and one or more male button-hole punch or punches, with corresponding punch-receiving die or dies, all combined and arranged, substantially as herein described.

Sixteenth, I also claim a type block, E, of letters or figures, or letters and figures, with an impression bed therefor and two end or ends and central male button-hole punches adjustable to different positions, with corresponding adjustable punch-receiving dies, all combined and arranged substantially as herein described.

Seventeenth, I also claim an imitation stitching stamp, E, and a type-block, F, with impression beds therefor, and one or more button-hole punch or punches, with a corresponding punch-receiving die or dies, all combined and arranged substantially as herein described.

Eighteenth, I also claim guides or stops, G, or end and ends and central oblong male button-hole punches and corresponding female punch-receiving dies, all combined and arranged substantially as herein described.

2,025.—Apparatus for Sizing and Finishing Skirt Wire. Ichabod Washburn and P. L. Moen, Worcester, Mass., assignees by mesne assignments of Chesney & Brown. Patented Oct. 13, 1863:

I claim, in sizing and finishing covered wire or other covered strips in a continuous operation, causing the wire to pass through a starch bath, and thence back and forth over rolls or heated cylinders, and in contact with a polisher, in the manner substantially as hereinbefore described.

DESIGNS.

2,107.—Soldiers' Memorial.—John C. Andrews, Woodstock, Me.

2,108.—Medallion of Abraham Lincoln.—Adolph Leconte, New York City.

2,109 to 2,132, inclusive.—Carpet Patterns.—Henry G. Thompson, New York City, assignor to Hartford Carpet Company, Hartford, Conn. (24 Patents.)

2,133.—Carpet Pattern.—James Hutchinson, Newark, N. J., assignor to W. and J. Sloane, New York City.

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[See Judge Holt's letter on another page.]

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C. A. C., of Ind.—Doubtless by advertising in the SCIENTIFIC AMERICAN you can procure the article you desire.

J. A. H., of Me.—Turbine wheels have yielded 90 per cent of the whole power of the water; we have never known an overshot wheel to yield 75 per cent. We see no reason why a turbine set near the upper end of an air-tight tube should not be as efficient as if set at the lower end, but though this plan has been tried it has not come into general use. Where *large masses* of solid float upon molten metal it cannot be from the same cause as the floating of a needle upon water.

J. C. A., of Mass.—If petroleum be subjected to sufficiently high temperature it will doubtless undergo destructive distillation, and be converted, in whole or in part into permanent gases. If the heat were great enough to convert it all into strictly permanent gases, we should suppose a large proportion would be marsh gas, and that the illuminating power of the oil would be diminished.

E. L., of N. J.—Any alcohol may be converted into vinegar by the quick process; vinegars retain the flavors of the grains or fruits from which they are made, but these flavors may be removed by filtering through charcoal. Prof. Everett, who has had a great deal of practice with the blow-pipe, says he likes the flame of a broad-wicked paraffine candle best of any; better even than that of an alcohol lamp. Magnetizing locomotive wheels has been tried on the New Jersey Central Railroad.

E. L. A., of Conn.—Probably the reason that your india-rubber would not dissolve in chloroform was that you tried vulcanized rubber.

E. G. F., of N. Y.—You can detect petroleum in springs with perfect ease and certainty by the smell.

H. C. E., of Mass.—To make 12 gallons of black ink, take 12 pounds of nutgalls, 5 pounds of green sulphate of iron, 5 pounds of gum senegal, and 12 gallons of water. Boil the nutgalls three hours, adding water for the evaporation; dissolve the gum in a little hot water and add it to the solution. See fuller directions on page 327, Vol. XI.

S. S. B., of N. Y.—You will shortly see an engraving of a steam carriage for common roads illustrated in the SCIENTIFIC AMERICAN.

A. D., of N. Y.—You will find a recipe for blue ink on page 250, last volume, SCIENTIFIC AMERICAN. We cannot publish the same thing over and over again.

J. F., of N. Y.—Address Solon Robinson, New York, for a work on farming.

A. H. Y., of Conn.—It is the common notion that the body of a drowned person may be raised to the surface by firing a cannon, but we never met with any evidence that there is any foundation for the opinion.

T. S., of Ky.—Gray hair may be dyed black by a preparation of nitrate of silver, or one of ammonia nitrate of silver. It would be better for you to buy the preparation of a druggist than to attempt to make it.

H. L. W., of Mass.—Find full directions for making transfer paper on page 341, Vol. XII., new series.

TO OUR READERS.

PATENT CLAIMS.—Persons desiring the claim of any invention which has been patented within thirty years, can obtain a copy by addressing a note to this office, stating the name of the patentee and date of patent, when known, and enclosing $1 as fee for copying. We can also furnish a sketch of any patented machine issued since 1853, to accompany the claim, on receipt of $2. Address MUNN & CO., Patent Solicitors, No. 37 Park Row, New York.

INVARIABLE RULE.—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired

RECEIPTS.—When money is paid at the office for subscriptions, a receipt for it will always be given ; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona-fide* acknowledgement of our reception of their funds

RATES OF ADVERTISING.

TWENTY-FIVE CENTS per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published we will explain that eight words average one line. Engravings will not be admitted into our advertising columns, and, as heretofore, the publishers reserve to themselves the right to reject any advertisement they may deem objectionable.

OFFICE OF ARMY CLOTHING AND EQUIPAGE, No. 29 BROADWAY, NEW YORK, July 3, 1865.

ARMY SUPPLIES.—SEALED PROPOSALS WILL BE received at this office until 12 o'clock M., on Thursday, the 13th inst., for furnishing by contract, in such quantities, from time to time, as may be required for the use of this office and depot, until the 30th day of May, 1866, the following articles of stationery :—

Letter paper, white, ruled, first-class, 11 pounds to the ream.
Foolscap paper, white, ruled, first-class, 12 pounds to the ream.
Blotting paper, white, first-class, 100 pounds to the ream.
Folio post paper, white, ruled first class, 24 pounds to the ream.
Envelope paper, best quality.
Envelopes, straw color, No. 9, best quality.
Envelopes, straw color, No. 10, best quality.
Envelopes, white, No. 6.
Lead pencils, Faber's or Eagle, No. 2.
Steel-pens.
Pen-holders.
Seal wafers, boxes.
Sealing wax, best English small sticks.
Black inks, quart bottles, Maynard & Noyes,
Arnold's Chemical Writing Fluid, quarts.
Black ink, quarts, copying.
Red ink, David's No. 3.
Inkstands.
Paper-folders.
Rulers.
Quills.
Office tape, best linen.
Memorandum Books.
Blank Books, cap ½ bound, 2, 3, 4, 5 and 6 quires.

Samples of the above articles can be seen, or further information with regard to the same can be received by application to this office.

Bidders will present with their bids samples of the articles they propose to deliver.

Bonds will be required from the successful bidder for the faithful performance of the contract.

The United States reserves the right to reject any part or the whole of the bids, as may be deemed for the interest of the service.

Proposals should be indorsed, "Proposals for Furnishing stationery," and addressed to

Col. D. H. VINTON,
Dep'y Q. M. Genl., U. S. A.
1

OFFICE OF ARMY CLOTHING AND EQUIPAGE, No. 29 BROADWAY, NEW YORK, July 3, 1865.

ARMY SUPPLIES.—SEALED PROPOSALS WILL BE received at this office until 12 o'clock, M., on Thursday, the 13th inst., for furnishing by contract, in such quantities and at such times as may be required, at and for the use of this depot, until May 1, 1866. Furnace Coal and Red Ash Coal, Egg size.

Proposals must be accompanied by a proper guaranty for the faithful performanee of a contract.

The United States reserves the right to reject all bids deemed objectionable.

Proposals should be indorsed, "Proposals for Furnishing Coal," and addressed to

Col. D. H. VINTON,
D. Q. M. Genl.
1

OFFICE OF ARMY CLOTHING AND EQUIPAGE, No. 29 BROADWAY, NEW YORK, July 3, 1865.

ARMY SUPPLIES.—SEALED PROPOSALS WILL BE received at this office until 12 o'clock M., on Thursday, the 13th inst., for furnishing by contract, in such quantities, from time to time, as may be required, for the use of this depot until the 1st of May, 1866, the following articles :—

Nails, kegs, 10d. and 12d.
Lamp oil, gallon, sperm.
Box chi els.
Box scrapers.
Wooden mallets, iron-bound,
Nail hammers.
Marking pots.
Marking brushes, assorted.
Trucks, Nos. 3 and 5.
Bailing twine.
Brass lanterns, for oil.
Corn brooms.

Further information can be had by applying at this office.

Bonds will be required of the successful bidder for the faithful performance of a contract.

The United States reserves the right to reject any part or the whole of a bid, as may be deemed necessary for the interest of the service.

Proposals will be indorsed, "Proposals for Furnishing Hardware," and addressed to

Col. D. H. VINTON,
D. Q. M. Genl. U. S. A.
1

BOILER INCRUSTATIONS.

Detroit, Jan. 24. 1865.

A. G. CROSS, Esq.—Dear Sir:—We have used your Anti-incrustation Powder in our locomotives during the past year, and find it to be all that is claimed for it, both in the removal of the old incrustation, and as a complete and perfect preventive of the formation of any scale whatever, and I believe without injury to the iron. I have no hesitancy in recommending it to all who are using steam boilers, as the most perfect of all the compounds which I have yet seen for this purpose.

B. BRISCOE, M. M., D. & M. R. R.
A. G. CROSS, Detroit.
3 3y

TO CAPITALISTS AND MANUFACTURERS.—THE undersigned, after years of intense application, has perfected a number of useful inventions, including a system of locks—one of them admirably adapted for mail locks; a steam motor, especially adapted for small powers; a magazine gun, very simple and complete; the most simple and durable clock yet introduced, etc. For particulars, or a home or foreign interest on most liberal terms, address [1*] SPENCER HIATT, Cuba, Ind.

THE EIGHTEENTH ANNUAL EXHIBITION OF THE Maryland Institute of Baltimore, for the Mechanic Arts, will commence on Monday Evening, the 2d of October, and continue to Monday Evening, the 30th of October 1865.

The hall will be open for the reception of goods on Monday, the 25th of September.

Goods for Competition and Premium must be deposited before Thursday Night, the 28th of September.

Circulars, embracing details, may be had of the Actuary at the Institute.

Communications addressed to the undersigned, or Joseph Gibson, Actuary, will be promdtly attended to. W. W. MAUGHLIN,
3 3m Chairman Committee on Exhibition.

A GREAT CHANCE FOR PROFITABLE INVESTMENT—The State and County Rights of Gilbert's new Patent Coal and Ash Sifter, at great bargains. The cleanest, handsomest and most convenient coal and ash sifter in use. No dust.
1* R. BLAKE, No. 5 Tryon Row.

THE CELEBRATED KENTUCKY CIDER MILL—Patented Nov. 21, 1863. State, County or Shop Rights for Sale. For particulars address the patentee, THEO. SHARP,
3 5* Louisville, Ky.

WANTED—A PRACTICAL MANUFACTURING ELECTRICIAN. Address E. P. PENN, No. 36 Prospect street, Cleveland, Ohio. 1*

IMPORTANT TO ENGINEERS AND MANUFACTURERS of Engineering Requisits.—Liberal arrangements offered parties to manufacture and introduce my Combined Safety Apparatus for Boilers. Illustrated June 24. The best arrangement yet. Address immediately, P. RIORDAN,
1* Care Munn & Co., Washington.

A RARE CHANCE.—HAVING OTHER BUSINESS to attend to, I would dispose of the entire right of my Revolving Double Cylinder Engine, illustrated on another page. This is a splendid opportunity to establish an extensive and profitable business by the manufacture and sale of these engines, or a fortune may be made in a short time by disposing of rights. Price, $5,000. Address J. S. FOSTER, Box No. 153, Virginia, Nevada. 1*

PLATINA—WHOLESALE AND RETAIL—FOR ALL purposes. H. M. RAYNOR, Importer, No. 748 Broadway, New York. Platinum Scrap of any sort purchased. 3 4*

FOR BEDSTEAD AND FURNITURE MACHINERY, Friezzing, Shaping and Molding Machines, address J. A. FAY & CO., Cincinnati, Ohio. 3atf

FOR DANIELLS'S PLANING MACHINES, CAR MORTISING, Boring Machines, Car-Tenoning Machines, Car Planing and Beading Machines, Etc., address J. A. FAY & CO., Cincinnati, Ohio. 3 1y

FOR WOODWORTH PATENT PLANING AND MATCHING MACHINES, Patent Siding and Resawing Machines, address J. A. FAY & CO., Cincinnati, Ohio. 3 1y

J. A. FAY & CO.,
CINCINNATI, OHIO
Patentees and Manufacturers of all kinds of
PATENT WOOD-WORKING MACHINERY
of the latest and most approved description,
particularly designed for
Navy Yards, Ship Yards, Railroad, Car and Agricultural Shops, Sash, Blind and Door, Wheel, Felly and Spoke, Stave and Barrel, Shingle and Lath, Planing and Resawing, Mills, Etc.
Warranted superior to any in use. Send for Circulars.
For further particulars address J. A. FAY & CO., Corner John and Front streets, Cincinnati, Ohio,
Who are the only manufacturers of J. A. Fay & Co.'s Patent Woodworking Machinery in the United States. 3 1y

FOR SALE—ENGINE BOILERS, SHAFTING, HANGERS, Pulleys, Rubber Machinery, Belting. Bolts, and Machinery of all descriptions, and Factories bought and sold, at DAVIS'S MACHINERY YARD, No. 122 and 124 Hudson street, one block from Jersey City Ferry, foot of Courtlandt street, N. Y. 3 4*

STEAM GENERATORS AND ENGINES.—THE AMERICAN Safety Steam Engine Company are manufacturing Brayton's Patent Steam Generators and Engines. There is a saving of 25 per cent in fuel over ordinary engines and boilers and they cost but little to keep them in repair There is no possibility of exploding the generator. For particulars and circular address GEO. WOODMAN, Treasurer and Agent, 84 Washington st. Boston 2 12

PARTIES DESIRING TO CONTRACT FOR THE manufacture of Wood and Iron Work, Agricultural Implements, or any article of machinery, can correspond with TITUS & BOSTWICK, R. R. Iron Works, Ithaca, N. Y. 4*

PARTNER WANTED WITH $10,000.—ANY PERSON who, for health or pleasure, desires to reside the whole or part of the year in a tropical climate will find this an opportunity such as is seldom met with. Address CUBA, SCIENTIFIC AMERICAN Office. 2 4

FOR SALE—THE PATENT RIGHT OF A DIFFERENTIAL Pulley Block, just issued, for raising heavy weights, whereby a great saving in time and labor is effected. Can be adapted for almost any purpose. For further particulars apply to THOMAS ALLEN, No. 192 Pearl street, or S. VAN HENNICK, No. 774 Washington street, N. Y., where model of machine can be seen. 2 2*

WANTED—THE ADDRESS OF THE MANUFACTURER of "Steel Corn Mills," in use in the Southern States. Any one having the information will confer a favor by sending it to H. F. SMITH, Box 1,469, New York. 2 2*

BOILER INCRUSTATIONS EFFECTUALLY PREVENTED by Winans' Powder, 10 years in use. No soda in it, consequently no foaming. H. N. WINANS, No. 11 Wall st. 2 4*

PATENT PORTABLE MUSKETO BAR, FOR TRAVELERS, Tourists, Sportsmen, Hiving Bees and Fishing. A perfect safeguard against all annoying insects. Sent free of postage by remitting $1 25. A liberal discount made for the trade. Also State Rights for sale. Address JOHN ZENGELER,
1 4* P. O. Box 2,682, Chicago, Ill.

ANDREWS' PATENT OSCILLATING ENGINES.—Double and Single Engines, from ½ to 125-horse power, finished at short notice. These engines leave the shop ready for use, require no special foundation, are compact, light and simple, and economical of power. For descriptive pamphlets and price list address the manufacturers, W. D. ANDREWS & BRO.,
2 4*tf No. 414 Water street, N. Y

ANDREWS' PATENT CENTRIFUGAL PUMPS—CAPACITY from 90 to 40,000 gallons per minute. For draining and irrigating lands, wrecking coffer dams, condensers, cotton, wool and starch factories, paper mills, tanneries, and all places where a large and constant supply of water is required, these pumps are unequalled. They are compact, require little power, and are not liable to get out of order. For descriptive pamphlet address
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PORTABLE ENGINES, SUITABLE FOR THE OIL regions, from 8 to 20-horse power, with large fire-place, independent steam feed pump, steam gage, and improved water heater. The most complete and best engines in the market. For particulars address WM. D. ANDREWS & BRO.,
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AGRICULTURAL AND MECHANICAL AGENCY, Havana.—EZRA K. DOD solicits consignments of and authority to contract for all articles of ready sale in the Cuban market, such as plows and other farm utensils adapted to cane culture, steam engines, boilers and mills, shovels, axes saws, cane knives, gas fittings, brass and copper seamless pipes, cooking stoves for burning coke, animal coal for refining sugar, illuminating and lubricating oils, etc. Patents will be secured and introduced. References, New York—Messrs. Gebhard & Schuchardt, Moses Taylor and Thomas Downing; Philadelphia—Messrs. Merrick & Sons; Baltimore—Messrs. G. DeFord & Bros. Boston—Thos. Oxnard, Esq. 2 4

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THE MOST VALUABLE MACHINE FOR BUILDERS and Carpenters, Furniture, Carriage, Agricultural Implement Sash and Door, Waived and Straight, Molding and Piano Manufacturers, complete for all kinds of irregular and straight work in wood, hard or soft, superior to all others, having the capacity of twenty good mechanics, called the Variety Molding Machine. We own nine patents, covering the valuable inventions for machines with upright mandrels. Have them manufactured in one place only for the United States and Europe, viz.: at Plass Iron Works, No. 110 East Twenty-ninth street, New York. We hear there are parties manufacturing machines infringing on some one or more of our patents. We caution the public from purchasing such infringements. Our patents secure to us the machine with either iron or wooden table, through which are two upright mandrels, having cutters in each head held by a screw nut; also, combination collars, saving 75 per cent in cutters, feed table to plane and cut, irons outside the cutters, preventing wood from taking undue hold. Also guards acting as plane stocks, making it safe for a boy to run.
Agents solicited. Please send for circular giving full description.
Information or orders for machine may be addressed COMBINATION MOLDING AND PLANING MACHINE COMPANY, New York City. 25 4*

VULCAN WORKS, BALTIMORE.—THIS WELL-known establishment is offered for sale, or would be leased for a term of years, with the privilege of purchasing within a stated period. It is complete in all its departments, embracing Iron and Brass Foundries, Blacksmith, Machine, Boiler, Pattern and Carpenter Shops, Coppersmith, Etc. The tools and machinery, with powerful cranes and twisting apparatus, are many of them of recent construction, and all in complete order for the manufacture of Marine Engines of the heavlest class, and all other descriptions of machinery. The situation, in close proximity to the water, and near the business portion of the city, is unrivalled. The reopening of trade with the South will in a short time bring a full supply of orders from that direction, and the establishment has always commanded a fair portion of Government work and of the local trade. For further particulars address H. R. HAZLEHURST,
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SMALL BEAM ENGINE.—I WILL SELL A BEAUTIFUL 2-horse beam engine, suitable for a small boat or light business, for $170 cash. Said engine is entirely new, and was made at odd times by a man "for the fun of the thing." The engine is complete, with feed pump, etc. No answers unaccompanied by stamp for return post noticed. EGBERT P. WATSON,
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WORRALL'S PATENT CHUCKS FOR SCREW MACHINE and Holding Wire Drills and other articles—The cheapest and best chuck for drills in use. 1½ inch in diameter, holding any size from ⅛ up to ½ inch. Perfectly true and reliable! Address THOS. H. WORRALL, Lawrence, Mass. 25 8*

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WATER POWER—AT N. FALLS, N. Y., FOR 50 Mills.—Now ready, for sale, a lease, at half price of Patterson Power Leases. Renewable every 20 years for ever. Apply at No. 23 Courtlandt street, New York to HORACE H. DAY. 1 8*

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TO MANUFACTURERS AND EXPORTERS.—ALL articles of American manufacture which are exported to foreign countries are entitled to a drawback equivalent to the amount of tax paid at the time of manufacture under the Internal Revenue Law. We offer our services to secure the refunding of this amount, and will cheerfully furnish all necessary information. MERCHANT, OAKLEY & CO., Custom-house and Internal Revenue Brokers, No. 71 Broadway, Room No. 55. 1 8*

PORTABLE STEAM ENGINES.—THESE WORKS have lately increased their facilities for the manufacture of their so popular engines. Prices reduced to a peace standard. Fourteen feet and more of heating surface given to the nominal horse-power. Delivery to the Oil Regions by part navigation much prompter and cheaper than from more eastern points per railroad. Send for circular before buying F. WM. RAEDER.
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MACHINE BELTING, ALL SIZES, ON HAND, OF superior Oak tanned Leather Belting, and for sale at reduced prices. ALBERT POTTS, cor. Third and William sts., Phila. 1 3*

NEW BOILER WORKS—LEHIGH BOILER WORKS, Allentown, Pa.—For the Manufacture of Boiler and Sheet-iron work of all descriptions, such as Locomotive, Flue, Tubular and Cylinder Boilers, Locomotive Tanks, Water Tanks, Steam and Blast Pipes, Chimneys, Etc. Also repairing of all kinds attended to with dispatch. All work done at these works is warranted to be of good material and well made. Part of the firm being Machinists, we are prepared to do out-door machine work, such as setting up engines and boilers, with steam and water pipes, and repairing generally.
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MILL STONE DRESSING DIAMONDS SET IN Patent Protector and Guide.—Sold by JOHN DICKINSON, Patentee and Sole Manufacturer and Importer of Diamonds for all Mechanical purposes. Also, Manufacturer of Glazier's Diamonds, No. 64 Nassau street, New York City. Old Diamonds reset. N. B.—Send postage stamp for Descriptive Circular of the Dresser. 24 12*

MACHINISTS' TOOLS, ENGINE LATHES, HAND Lathes, Planers, Upright Drills, Etc., of best material, and superior workmanship, manufactured and for sale by WM. M. HAWES & CO., Fall River, Mass. 24 9*

FOR SALE—THE ENTIRE RIGHT OR STATE Rights of my Patent Brass Turning Cleaning Machine. It will clean from 300 to 600 pounds of dirty turnings per day. Address J. JONSON,
25 4* No. 75 N. Howard street, Baltimore, Md.

A GOOD CHANCE.—GEO. BINNS, MANUFACTURING Chemist, No. 7 Gold street, N. Y., will sell at half price all the New and Improved Apparatus for making Sulphate Ammonia. Also, for sale, 2,000 barrels of Ammoniated Lime, for manure, at $1 25 per barrel. 24 4*

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FOR SALE—ONE 26-IN. FARRER PLANER AND Matcher, $6; one Double Surfacer, $4 50; one small Planer and Matcher, $4 50; one hub Mortising Machine $2 50. Address
1 2 E. C. TAINTER, Worcester, Mass.

TRUE'S POTATO PLANTER DOES THE WORK OF 12 men. Rights for sale. J. L. TRUE, Garland, Maine. 5 10*

TO GAS COMPANIES.—FOR SALE AT THE ISLAND Works of the Gas Co., Washington, D. C. 1 Retort House, roof frame of iron, 141 feet long, 53 feet wide, with the slate attached.
All the Iron Work belonging to 28 benches, of 3 retorts each.
4 Washers, 18 inches diameter.
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2 8-inch Slide Valves.
1 5-foot Station Meter, together with sundry connections, the whol forming a complete Gas Station, in good order.
For examination apply to GEO. A. MCILHENNY, Engineer of Gas Works, Washington, D. C.
For purchasing apply to B. H. BARTOL, Philadelphia. 23XIItf

TO MACHINISTS AND ENGINEERS.—FOR SALE—Gear-calculating Rules, correctly graduated for 2,000 different gears, giving the number of cogs directly opposite their outside diameters, with allowances made for pitch lines. Warranted. Sent, with directions, $5, or $5 50 sent by mail, post-paid. Give plain directions, and address CHARLES B. LONG, Patentee,
24 5* Worcester, Mass.

N. C. STILES'S PATENT POWER FOOT AND DROP PRESSES.—Dies of every description made to order. Send for a circular. N. C. STILES & CO.,
23 28* West Meriden, Conn.

STEAM ENGINES—WITH LINK MOTION, VARIABLE automatic cut-off, of the most approved construction; Mill Gearing, Shafting, Hanger, Etc. Address M. & T. SAULT,
1 26* New Haven, Conn.

GILBERT'S PATENT COAL AND ASH SIFTER—A new and useful invention, of which a portion of the State Rights are for sale. Address EMERY & HUTCHINSON, Manufacturers, No. 57 Canton street, Boston, Mass. 22 10*

BOLTS, NUTS, WASHERS, SET SCREWS, COACH Screws and Machine Screws, constantly on hand for sale by LEACH BROTHERS, No. 86 Liberty street, New York. 21 12*

D. LAKE'S FLY-TRAP—ILLUSTRATED IN THE SCIENTIFIC AMERICAN of June 10, 1865. Sent by express on the receipt of $4.½ DAVID LAKE, Smith's Landing, N. J. 24 10*

TRIP HAMMERS.
Parties using or intending to erect Trip Hammers are invited to call and examine the Hotchkiss Patent Atmospheric Hammer, made by CHARLES MERRILL & SONS, No. 556 Grand street, New York. They are run by a belt; occupy 2½ by 4 feet space; strike 200 to 400 blows per minute, according to size, and, the hammer running in slides, each blow is square and in the same place. Die work can be done under them more rapidly than under a drop, and for swaging it is unequaled. They are very simple in their construction, under perfect control, and require much less power than any other hammer. Send for a circular illustrating the hammer, which gives full particulars. 1 tf

THEYSON & OGG, NO. 39 GREENE STREET, NEAR Grand, Machinists, Brass Finishers and Model Makers, Experimental Machinery. Indicators, Registers and Steam Gages of every kind accurately and promptly made. 1 8*

SCREWS.—COMSTOCK, LYON & CO., OFFICE NO. 74 Beekman street, N. Y., manufacture Turned Machine Screws (a superior article to a headed screw), of all sizes under ½ inch in diameter, 3 inches long. Also Steel, Iron and Brass Screws for Guns, Pistols, Instruments, Trusses, Artificial Limbs, Etc., of the finest quality, to order. 1 11*

PATENT HORSE-POWERS—ADAPTED TO COTTON GINS, Thrashing Machines, Farm Mills, Etc. Portable, easy-working, and proved durable by long use. For Circulars or machines address CRESSON, HUBBARD & SMITH, Philadelphia. 24 6*

GRINDSTONES OF THE BEST QUALITY MANUfactured for Mechanics, Railroad Shops, Manufacturers and the trade. Address orders to F. M. STEARNS & CO.,
1 7* Berea, Cuyahoga Co., Ohio.

MACHINISTS' SUPPLIES, OF ALL DESCRIPTIONS, on hand for sale by LEACH BROS., 86 Liberty st., N. Y. 21 12*

SPOKE AND HANDLE MACHINERY.—THOSE DESIRING to purchase the best machine in the United States for making Spokes, Yankee Ax Handles, Plow Handles, and irregular forms generally, should send for cut and description to E. K. WISELL, Manufacturer and Patentee, at Warren, Ohio. 21 8*

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23 8* E. CLARK, No. 321 Spring street, New York.

THE UNION MOLDING MACHINE—BEST IN USE —For circulars address H. A. LEE, patentee, Worcester, Mass. 20 10*

PATENT EXCHANGE, NO 229 BROADWAY, NEW YORK.—Patents and manufactured articles introduced and sold on commission. (1tf) THOMAS G. ORWIG & CO.

2,000 BOLTS PER DAY CAN BE MADE ON our PATENT MACHINES. Also Rivets and Spikes of all kinds
HARDAWAY & SONS,
Philadelphia, Pa.
REFERENCES.
Chouteau, Harrison & Valle, Laclede Rolling Mill.
Collins & Holliday, Broadway Foundery.
Marshal & Co., Western Foundery.
John McCarty, Bogy Nail Mill. 1 tf

INGERSOLL'S IMPROVED HAY AND COTTON PRESSES.—We make three classes of presses.
First—HAND POWERS.
A cheap and exceedingly economical press for farm and plantation use; are very compact, easily handled, and readily put together for use, and possess superior advantages for shipping.
Second—HORSE POWERS.
These have met with much favor, and are highly commended wherever used.
Third—SCREW PRESSES.
These find large sale in foreign markets. It is a complete and superior machine for packing Cotton, Wool, Hides, Hair, Hemp, Etc.
Also a very popular, light and cheap machine for Sawing Down Trees. Weight of machine less than 25 pounds, and price $25. State Rights of this machine for sale and rich bargains offered.
Please write for catalogue and further information to
INGERSOLL & DOUGHERTY,
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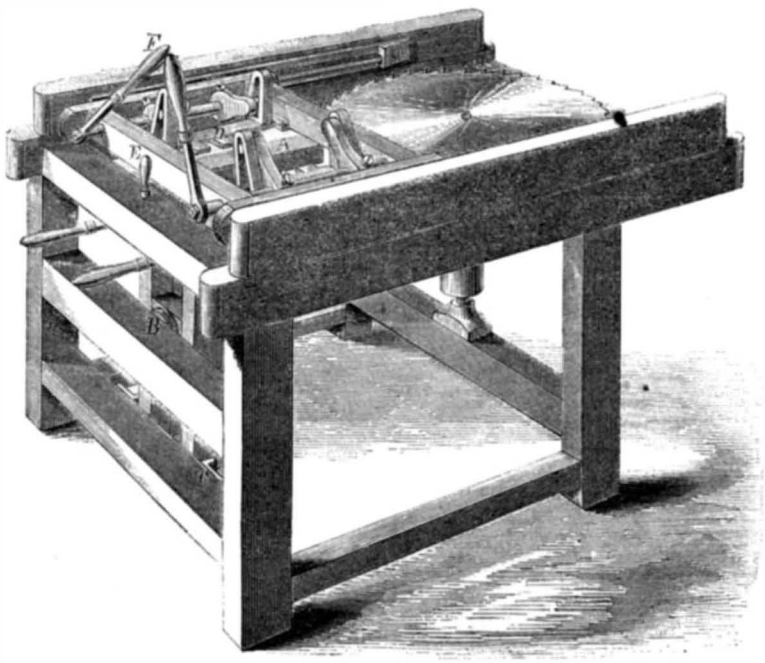
Improved Shingle Machine.

This machine is intended to cut shingles and heading, and is highly recommended by parties who have used it. It was awarded the first premium at the New York State Fair, at Utica, in 1863, and at other places also. It is capable of cutting obliquely or otherwise, any desired thickness or length, up to 24 inches. It is safe and durable and not liable to get out of order. As shingles and heading are articles of great demand, the aim and object of the inventor has been to get up a machine that would do the work with the greatest ease, rapidity and in the most perfect manner. The saw runs horizontal, striking the bolt in the side, and cuts with the grain. The carriage travels only in proportion to the width of the shingle or heading, making them, when the saw is in proper order, as smooth as though shaved.

In operating this machine the bolt is laid on the table, A, which swings on a center, B, and is capable of being inclined at any angle. There are two gages, C, at the bottom, by which the inclination of the table is regulated. The bolt on the table is then caught and held by the dogs, D, attached to the carriage, E, and worked by the levers, F. The carriage and bolt are then moved up against the saw, which rapidly severs the shingle from it. The operation of setting and sawing is repeated continually until the bolt is used up. The alternate action of the table in moving from side to side, taking off each shingle regularly, so that all the bolt is used without loss. It is guaranteed to cut 10,000 shingles a day.

It was patented May 13, 1862, and is manufactured by Wheeler, Melick & Co., New York State Agricultural Works, Albany, N. Y. For machines, or town county or State rights, address Franklin Krum & Co., Albany, N. Y.



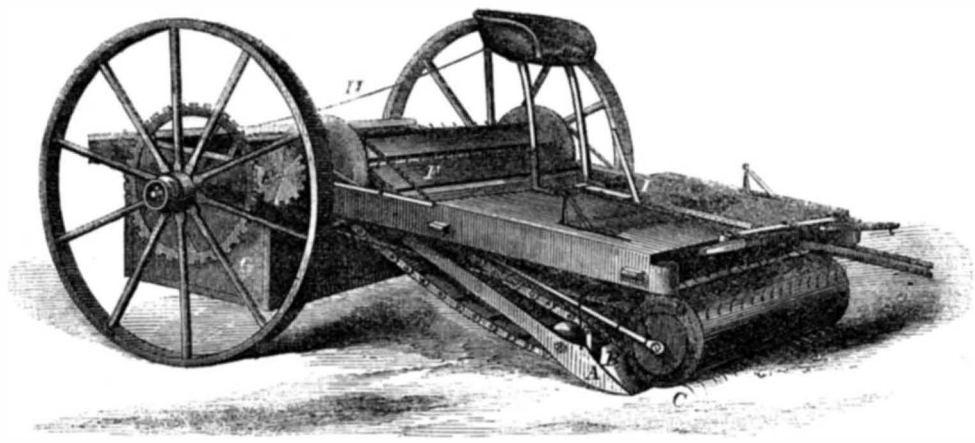
SMITH'S SHINGLE MACHINE.

Improved Stone-gathering Machine.

In some parts of the country stones cover the surface of the ground so thickly that they have to be collected by hand and carried away. This involves great expenditure of time and money, which might be dispensed with, and it has occurred to inventors that the work might be successfully accomplished by a machine. In the engraving published herewith we give an example of the latest machine of this kind. It is designed to be self-acting and merely requires to be driven over the field, when the stones are all gathered up and thrown into a receiver behind from which they are afterwards discharged.

The details are as follows :—The shoe, A, of the machine is furnished with a guard, B, in front, against which the teeth, C, on the roller, D, work closely, but not in contact. As the machine advances the roller receives rapid rotary motion from the gears, E, affixed to the main axle. This rotation causes the hooked teeth to catch up the stones and throw them over on to an apron, F, which is furnished with slats bearing teeth similar to those on the roller. These teeth convey the stones to the hopper, G, behind, from which they are afterward dumped as required.

The cord, H, works an ingenious device in the rear for dropping the bottom of the hopper and allowing the stones to fall out, and the hight of the shoe from the ground is regulated by the lever, I, so that the machine works as well on rolling land as on a plain. This apparatus can be used for potatoes or other vegetables of similar nature. A great demand for machines of this kind has sprung up lately.



STONE-GATHERING MACHINE.

This invention was patented through the Scientific American Patent Agency on April 26, 1865, by J. L. Quimby, of Pleasant Grove, Pa.; for further information address him at that place.

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